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Gen. FRANCIS L. VINTON, Mining Engineer, is in charge of the Western Office of the ENGINEERING AND MINING JOURNAL, at Denver, Colo. Communications relating to the business of his department can be addressed to him at Denver. Correspondence for the ENGINEERING AND MINING JOURNAL should be addressed to the Editor in New York.

FREIGHT on coal from North of England ports to this country is about $1 a ton; 5s. being paid and 4s. 6d. refused, and some grain vessels taking in ballast rather than accept the lower rate. Our incorrigible British exchanges say this demonstrates the fact that our Western farmers are paying, in grain freights, for bringing coal back here, since the duty on coal —75c. per ton—makes it necessary that the freight should be a minimum.

STRIKE OF COAL MINERS IN COLORADO.

There seems to be an opening for coal miners in the Erie, Colorado, mines, where, the Denver *Tribune* tells us, the men are now on strike because it was proposed to reduce wages from 85 to 75 cents a ton for mining, the price being paid at the Marshall mines in same region. In some of the Colorado coal mines the men receive $1 a ton for mining. Our Eastern mines pay 35 to 40 cents a ton.

THE CLAUSTHAL ORE-DRESSING WORKS.

With this issue we conclude the elaborate, illustrated description of the great German ore dressing works of Clausthal. In many respects these are the most complete works in the world, and they illustrate the most advanced phase of German ore-dressing science, which every one knows, in thoroughness and efficiency, has no superior, if it has any equal.

Of course the difference in our ores, in our rates of wages, and in the very reckless and energetic spirit of our people, make the adoption of an exactly similar establishment impossible in this country; nevertheless the publication of this elaborate description will prove of immense value to our own works, for it gives them the information that, modified by our American ingenuity, will make our own works more perfect and lead to the large saving which is quite possible in most of our dressing works to-day.

After an intermission of a few weeks we will supplement these articles by others, prepared for us by Mr. J. C. RANDOLPH, on the magnificent and less-known new Swedish ore-dressing works at Falun and the Westphalian works at Zeche Perm.

STILL REDUCING WAGES IN ENGLAND.

The colliers of Dean Forest have received notice of a five per cent. reduction in their wages. The owners of the South Yorkshire and North Derbyshire collieries have accepted the compromise proposed by the men, and wages have therefore been reduced five per cent., instead of seven and one-half per cent., as at first contemplated.

With English coal now coming into this country at $3.50 a ton, these announcements of further reductions in wages have an especial interest for us. It is difficult to imagine how the price of freights on our own soft coals can be advanced under this condition of things, and it is equally difficult to see how the price of anthracite can be advanced while bituminous coal sells at these figures. In other words, the combination programme for raising the price will so limit the market as to bring about the very evils it was expected by the sanguine to avoid.

ELECTRO-METALLURGY.

The valuable articles on this subject, from the pen of Mr. W. S. KEITH, which we have, from time to time, published in these columns, are worthy the best attention of our metallurgists.

The science of electro-metallurgy is in its very infancy, and yet we believe its capabilities have been either sufficiently demonstrated or so clearly foreshadowed as to justify the expectation that it will become, for many and perhaps for nearly all metals, *the metallurgy of the future.*

DENVER AND THE NEW BRANCH MINTS.

The enactment of the Little-silver-dollar-legal-tender law has made it necessary that the Government, as well as the counterfeiters, should establish several new coinage mints; consequently, we find a number of our Western and Southern cities striving for the prizes. Of the Western competitors Denver, Colo., seems to us as far the most advantageous, for many reasons. It is the metropolis of the precious metal producing districts of the Eastern Rocky Mountains; it is admirably located for health fulness of climate; has numerous railroad outlets, which will unquestionably make freights low, and in the near future it will be the great metallurgical centre of the gold and silver districts.

Its abundant and cheap supplies of mineral good coal, its central location and its railroad connections, to say nothing of other advantages, render this inevitable. Prof. HILL is already making arrangements for the transfer of the extensive Boston & Colorado Smelting Works to Denver; Messrs. SCHEYER & Co. have commenced treating silver ores there by the wet way; there are already other works in the vicinity of Denver, and our correspondent, in his letter of Colorado "Mining News," tells us that the removal of smelting works from Omaha to this point is also in contemplation.

If the manifest advantages of an abundant supply of silver and gold at lower prices than they can be purchased further east, where the freight from the works must be added; of a central location with numerous railroad outlets, and a most salubrious climate, are to guide the decisions of our Solons at Washington, then Denver is certain of selection as the home of a coinage mint. No other city of the West offers equal advantages.

NEW PUBLICATIONS.

THE LAW OF MINES, MINERALS AND MINING WATER RIGHTS; *A collection of select and leading cases on Mines, Minerals and Mining Water Rights, with Notes. By* GEO. A. BLANCHARD and EDWARD P. WEEKS. San Francisco: Sumner, Whitney & Co., 1877 8vo., 852 pp.

The treatise on Mining Law, by Mr. WEEKS, recently noticed in our columns, is devoted to the federal law which applies exclusively to the mines and mineral lands of the public domain, or such as have been obtained from the United States by purchase and patent. A far wider and more important field (since it includes the U. S. statutes and much besides) is covered by the present volume. The innumerable questions arising under the statute and the common law, and involving the relations of tenants, mortgagees, trustees, contractors, purchasers, vendors, licencees, lessees, directors, agents, etc., are really more directly related to the daily experience of most mining operators than are the occasional proceedings under the laws and customs established for peculiar conditions in the West. The principles governing the ownership and use of surface or subterranean waters also need to be clearly stated for the benefit of citizens as well as lawyers. The appearance of such books as this gives an assuring evidence that the reign of chaos in our mining legislation is over, and that our American system is forming itself in accordance with the settled rules of equity and experience. The number of cases here cited and annotated is large. Among them we notice many which may be said to have formed epochs in the mining jurisprudence of the country, such as the Mariposa cases in California and the Coleman case in Pennsylvania. The principles of the English, French and Spanish laws are explained, but the book is weak on the side of German law, to which the authors seem to have given no attention. It is true that the German codes have had but an indirect influence upon our own· but, on the other

hand, there is no other literature in which the numerous perplexing questions of administration, raised by the irregularities and peculiar vicissitudes of this industry, are so thoroughly and acutely discussed as in the treatises of German publicists and the decisions of German tribunals. Germany is, so far as we know, the only country which supports a regular periodical (the *Zeitung für Bergrecht*, published by BRASSERT, of Bonn) devoted exclusively to the discussion of such subjects.

Aside from this deficiency, which affects merely the general observations, not the special object, of the work, Messrs. BLANCHARD and WEEKS have produced a volume which will rank high as an authority, and retain its usefulness for many years. Future books, or future editions of this one, will doubtless be clearer and ampler on many points still obscure; but this is extraordinarily good, as compared with what could be found down to last year, in English and American literature. Mr. WEEKS, we should add, has annotated the mining cases proper, and Mr. BLANCHARD those which involve water rights. *

UNITED STATES GEOLOGICAL EXPLORATION OF THE FORTIETH PARALLEL.—CLARENCE KING, *Geologist in Charge*. Vol. II.—*Descriptive Geology*. By ARNOLD HAGUE and S. F. EMMONS. Washington, 1877. 4to. 890 pp., 26 plates.

The volumes of Mr. KING's great work, long delayed in publication, are now appearing in rapid succession, and are all the more valuable for the deliberate care with which they have been prepared. The present volume, perhaps to a higher degree than any of its predecessors, needed the advantage of all the careful work in field and laboratory which could be given to its theme. Stratigraphy, lithography and paleontology must furnish the cumulative evidence and the verifications upon which the descriptive geologist may base his conclusions, and all these departments together will be required to give materials for the inductions and generalizations which Mr. KING himself is expected to offer in his own report now in press. To that we shall look forward with special interest, as crowning the whole work. Meanwhile, the contributions to science contained in the reports of his assistants are of no little importance.

In the volume before us, the region of the Fortieth Parallel is treated in five chapters, corresponding to five geographical areas, shown on the five maps of the atlas. These are: The Rocky Mountains, the Green River Basin, the Utah Basin, the Nevada Plateau, and the Nevada Basin. We presume the last of these includes the area shown by this survey to have been once occupied by a great lake, the remnants of which are now seen in the lakes or sinks of the Carson, the Humboldt, Reese River, and the Truckee (Pyramid Lake), the Mud Lakes, etc. The names of the other regions sufficiently indicate their relative position.

The work has been divided between Messrs. HAGUE and EMMONS in such a way that each has described the districts with which he was best acquainted, though they have made free use of each other's field notes and those of Mr. KING, whose general supervision and advice is also acknowledged in complimentary terms. Mr. KING, on his part, bears cordial testimony, in his introductory letter, to the skill and enthusiasm of his assistants, and the mutual feeling appears to be as well deserved on both sides as it is sincere.

There could be no more interesting and remunerative field for geological study than that which these fortunate and worthy young geologists have been for ten years exploring. The regions of the Colorado on the south and of the Yellowstone on the north offer, perhaps, some scenes of greater sublimity, though it may be questioned, after all, whether anything on the continent, except the Yosemite and the Hetch-hetchy and King's River, surpasses in picturesque grandeur the cañons of the Wasatch and neighboring ranges. But certainly, for variety of form, structure and geological history, the belt of the Fortieth Parallel will bear comparison with any other zone. Moreover, a true understanding of its geology gives a safe guide to the history of the continent. We congratulate Messrs. HAGUE and EMMONS upon their great opportunity and upon the manner in which they have employed it. The atlas, which we have not yet had an opportunity to examine, but which a glance shows to be a work of extraordinary fidelity in preparation and beauty in execution, will remain a permanent witness of their patient and accurate labors; and the text of their report, giving clearly the grounds upon which their graphic representation rests, will facilitate the intelligent revision of their work when more detailed surveys (if such should ever be required) take the place of explorations and reconnoisances.

The lithographic illustrations (reproduced by JULIUS BIEN from the superb photographs of T. H. O'SULLIVAN) are remarkably good, and represent not only striking features of geological structure, but also scenes of great natural beauty. The scenery of the Western basins and plateaus, presenting usually but a scanty growth of vegetation, suffers less from photography than that of regions which depend more largely upon color for their landscape effects. Yet even here we find ourselves longing for the hues which clothe even the desert—the purple on the hills, the infinite gradations of gray and yellow and red which flush the barren earth, even the sombre tints of the sage-brush. Of course the blood-red cliffs of Echo Cañon, with their evergreen fringes, or the rich brown and brilliant emeralds of the Wasatch cañons cannot be given, and are sorely missed, in a picture done in black-and-white. But in sharpness of form and delicacy of shadow, the plates in this volume, like the photographs from which they were taken, leave nothing to be desired. We do not find among them any views of the Great Shoshone Falls of the Snake, nor in the text any description of that locality. Perhaps Mr. KING is reserving that subject for himself. It is certainly worthy of special treatment, not only by reason of the importance of the cataract (second only to Niagara) but also for its bearing upon the topic of the eruptive rocks, their classification and succession, to which Mr. KING is said to have given special attention, and for which the cañon of the Snake, carved in eruptive rocks for not less than 500 miles, ought not to be omitted.

We notice on page 459 of this volume, in Mr. EMMONS' excellent account of the region south of Salt Lake, the statement that in the Wasatch and Oguirrh ranges, the line of greatest disturbance of sedimentary beds, and of most considerable development of older granites and porphyries, and also of younger volcanic rocks, indicates the region of the greatest concentration of argentiferous minerals. In the Aqui Mountains, which are traversed by the same line, he says the metalliferous resources have not yet been developed. If the coincidence noted in the two former ranges be anything more than a coincidence, this hint may be of value as to the third range not only, but also for prospectors generally. In the present stage of mining, however, it is not easy to decide (except in such notable instances as the Comstock) where "the greatest concentration" of ores has taken place; and the greatest activity of geological and chemical causes may result in deposits too numerous and variable to yield anything but exasperation to the miner—like that hill in Nevada which is said to contain "more ore in less spots, and less ore in more spots, than any other hill that ever was uphove!" *

DEPOSITED CARBON IN THE BLAST FURNACES.

[A communication to the Lafayette Chemical Society of Lafayette College, Easton, Pa.]

In November, 1877, the blast was taken off No. 4 Furnace at the Crane Iron Works, Catasauqua, Pa., in order to place in position a new bell and to repair the arch of the gas flue leading to the boilers. The bricks forming the arch of this flue, for some cause unknown, had become deranged to a great extent and were apparently ready to drop at any moment, so that it was found necessary to tear down a portion of the furnace lining. The inner circle of fire-brick in the upper portion of the furnace were protected by a cast-iron casing, covering the exposed ends and under surfaces. At a distance of eight feet from the furnace top, filling in between the iron casings above and the fire-brick below, was found a large deposit of carbon. This deposit did not occur in isolated spots, but rather uniformly distributed throughout the layers as far as we had opportunity to observe; whether it extended to a greater depth, or the whole distance round the furnace, I am unable to say. The position of the deposit was on the front, or the side of the furnace receiving no blast, and almost directly underneath the gas flue.

Mr. JOSEPH HUNT, the Assistant Superintendent of the Works, who was present at the time and collected the sample, observed that the courses of brick on this side of the furnace were distorted to a great extent and elevated several inches above those on the opposite side. Thus it seemed that the carbon has exerted a physical force, causing the displacement in the furnace lining and in the arch of the gas flue. No deposit was found beyond the inner circle of fire brick, as the iron casings only extended this far.

When taken from its position the mass of carbon was seen to glow, a partial combustion taking place on the surface, converting the small particles of metallic iron or lower oxides distributed throughout the mass into the peroxide. This is readily seen on examining the lumps, where on the surface small particles of the peroxide of iron are noticed gradually decreasing as we go in and finally disappearing in the interior. The carbon was found principally in the form of a powder, but occasionally aggregated into lumps; it had a uniform black color, and when rubbed on the hands resembled powdered graphite. It absorbed water readily and was slightly attracted by the magnet.

The total amount of metallic iron was determined in samples taken from different portions of the mass. Two samples of the fine portion taken from different places yielded, on analysis, 4·23 and 3·23 per cent. metallic iron. The interior of one of the lumps was also analyzed; the total amount of metallic iron it contained was 2·56 per cent; 0·35 of this existed as metallic iron, the remainder, 2·21 per cent. was combined as an oxide. The substance was free from cyanogen and chlorine.

The cause of this formation was evidently due to the presence of the iron casings, as we do not find the deposit beyond the point where they extended.

In the *Transactions of the American Institute of Mining Engineers*, vol. ii., I notice that Mr. FRANK FIRMSTONE has already called attention to a similar deposition of carbon in the blast furnace, but I do not know that the occurrence is usual.

The cause of the deposition of the carbon in the furnace at the Crane Works was doubtless the iron casings, which, when partially oxidized, effected the decomposition of the carbonic oxide in the manner first pointed out by BELL, and subsequently investigated by GRUNER. If the surmise that the displacement of the bricks was caused by the accumulation of the carbon be correct, another item of interest is added to this important reaction.

JAMES GAYLEY, M. E., Chemist, Crane Iron Works.

IRON MINES IN NEW MEXICO.—The Lyon County (Nev.) *Times* of the 16th inst. says: "An iron mountain, rivaling in size the famous Iron Mountain of Missouri is reported to have been discovered in Colfax County, New Mexico. The reputed purity of the ore, in connection with the large quantity of coal abounding in Colfax, make the prospects of future industries in that locality very encouraging

REFINING COPPER BY ELECTROLYSIS—ECONOMY OF THE OPERATION AND PURITY OF THE RESULTING FINE COPPER.

By N. S. Keith, New York City.

(*Continued from page* 201.)

The nearer pure the material the less acid need be added, and consequently less solution to be removed. This action can be tested by any one having the materials and a galvanic cell. Do not use more than one cell.

The economy of the operation consists in using a proper dynamo-electric machine, with large vats, large surfaces of the impure metal, large surfaces of copper to receive the deposits, composing each electrolyzing cell, and *many of the cells placed in series.*

The following extract serves for illustration:

[Scientific American Supplement, June 23, 1877.]

"M. Thenard has recently made some investigations into the advantages of the compound bath in electroplating, the source of the current being a Gramme magneto-electric machine having a permanent Jamin magnet, and driven by a Lenoir engine. The liquid used was composed of 125 parts of sulphate of copper, the same amount of concentrated sulphuric acid, and 1,000 parts of water. Number of revolutions from 1,200 to 1,300 per minute. The electrodes immersed in each bath were three plates of 64·7 inches area, each placed parallel and facing each other. The outer plates of each group, distant from the middle one 0·78 inch, worked positively, the inner plate negatively, so that the latter on its two faces became charged with the copper from its neighbors. Sixteen baths were arranged, and the current established. At the end of one hour the exact weight of the middle cathodes were determined, there being upon each a regular and strongly adherent deposit. Then at intervals of twenty minutes thereafter one bath was removed, so that the current might first pass through sixteen, then fifteen, and so on, until all the baths had been taken out of action. The middle cathode of each bath in turn or stoppage was removed, washed, dried, and accurately weighed. The following table exhibits in grains the results of the investigation:

Number of baths.	Period of immersion h. m.	Augmentation of weight of each cathode.	Gain per cathode and per 20 minutes.	Total weight of copper deposited in 20 minutes.
16	0·20	1·210	1·210	19·360
15	0·40	2·445	1·222	18·330
14	1·00	3·725	1·241	17·374
13	1·20	5·085	1·271	16·523
12	1·40	6·495	1·299	15·588
11	2·00	7·995	1·332	14·652
10	2·20	9·535	1·362	13·620
9	2·40	11·155	1·394	12·546
8	3·00	12·775	1·419	11·352
7	3·20	14·535	1·453	10·171
6	3·40	16·270	1·480	8·880
5	4·00	18·040	1·500	7·500
4	4·20	19·990	1·540	6·160
3	4·40	22·000	1.570	4·710
2	5·00	24·140	1·610	3·280
1	5·20	26·290	1·640	1·640

It will be seen from this that the quantity of copper deposited in a given time augments with the number of baths, although the cathodes of each one of the latter is charged with a less amount of metal. The mechanical effort on the other hand was found to increase very sensibly with the diminution in number of baths. These experiments were many times repeated with uniform results. The electrodes were then connected for quantity instead of for tension, and it was found that the sum of all the deposits was constant regardless of the number of electrodes. The quality of the deposit was moreover improved in proportion to the augmentation of the latter. M. THENARD is endeavoring to determine the general laws governing these results."

This demonstrates that less power (in the proportion of 1·210 to 1·640) was required to produce a deposit of 19·360 in 16 vats in twenty minutes than to deposit 1·640 in a single vat in the same time. This is a saving of about 94 per cent. of the power.

If the size of the electrodes had been increased so as to keep the total resistances the same the result would have been $1·640 \times 16 = 26·240$ for the same power used.

If the vats had been increased in number to 32 without increasing their size, the power used would have been about one-half what was used with one, and the total deposit about 26·200. If they had been increased in size as well as number to 32, so as to have the total resistances the same, the result would have been 52·480 for the same amount of power expended on one; a saving of 97 per cent. in power.

Connected for quantity, *i. e.*, in "multiple arc," instead of in "series,' the deposit was about the same in quantity as with a single cell, showing that 1·640 was the extreme capacity of the machine.

The "quality" of the deposit refers to its availability for electrotyping or electroplating, not to its purity.

M. Thenard need not go beyond Ohm's law for others governing the results.

The dynamic equivalent of a veber current of a volt electromotive force is 44·24 foot-pounds per minute. $33,000 \div 44.24 = 746$ webers, electric equivalent of one horse power. A verber current deposits 10·08 grains of copper in a single depositing cell.

A machine may be made having 1 volt electromotive force which will give through a resistance of ·00134 ohm a current of 746 vebers from 1 horse power. Take 44 electrolyzing vats, having, with the machine, a total resistance of ·00134 ohm and we will get, in all, a deposit of over a ton of 2,000 pounds of pure copper in 24 hours.

Veber equivalent. Vebers. Hours. Vats.
$18·03 \times 746 \times 24 \times 44 = 14,093,600$ grs. $= 2,013$ lb.

If we take this power from the consumption of 72 lb. of coal, or from water power, makes comparatively little difference in the saving from the expense now incurred in getting copper from impure metal.

When the copper is treated for the separation of gold and silver the saving is far greater, as will be readily seen.

The saving may even be carried further.

This plan is specially valuable in Colorado and other sections where gold and silver are associated with copper in the ores.

This process of separation and refining of metals is largely practiced by a firm in the neighborhood of Swansea, Wales, in competition with the furnace processes, for copper alone, and with the wet processes of separating and refining copper, gold and silver. As the necessary labor is very small, it is plainly to be seen that its economy is great.

Dr. HIGGS, C. E. and Associate of the Institution of Civil Engineers, at a recent meeting of the Institution in England, stated:

"For the deposition of large quantities of metal, where by arranging baths in succession, little change was made in the total circuit resistance, the dynamo-electric machines gave much greater economy. With one of these machines, and a proper succession of vats, as much as three tons of copper have been deposited daily." (*London Journal of Gas-Lighting, January* 29, 1878.)

It is to be observed that the amount of power applied is not stated.

I am informed that fifteen hundred depositing cells are in use. One set of 327 are placed 109 "in series" and 3 in "multiple arc." It is without question the cheapest mode of solution of metals, as so little acid is used. In fact none is necessary after the first solution of copper is made, unless the impure metal contains iron, zinc, etc., which it may not be desirable to save. Then only enough acid to dissolve them is necessary.

THE CHICAGO PUMPING ENGINES.

SOME IMPORTANT STATEMENTS.

TO THE EDITOR OF THE ENGINEERING AND MINING JOURNAL:

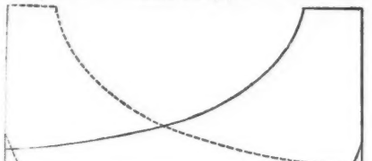
Your recent articles animadverting upon the terms of the advertisement for the new Chicago pumping engines—the test—the final settlement with the contractors—the duty of experts—and duty of engineers in charge of the work, have caused considerable fluttering here.

For several years efforts have been made to improve our pumping machinery; some advance has been made in the right direction, but we feel feel that when we expected *full contract* engines, engines have been foisted upon us by the contractors, aided by certain experts, certifying to a duty higher than it is possible for the engines to give, thereby enabling the contractors to secure the full contract price of the engine, to the detriment of the city. Your arraignment of the parties who conceived, carried on and consummated this nefarious business is most righteous and just.

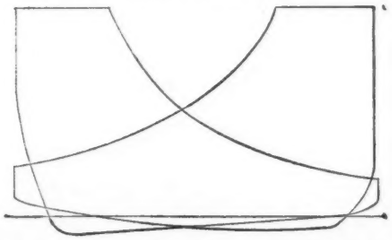
There are some facts, which were noted at the first test, which throw some light upon the subject, and may be of interest and worthy of record. At the first test, visitors were allowed to go wherever they pleased, and examine for themselves. The boilers were six in number, arranged in three batteries, with a wall separating one from the other. The steam pipe ran at the rear of all the boilers, and the pipe connecting each boiler with the same had a stop-valve to connect or disconnect at pleasure, with no other means to prevent the flow of steam from the boiler to the steam-pipe, except the stop-valve, *which could* be manipulated. The boilers had a return flue over the top of each for superheating the steam. During the test, five boilers were fired. Four supplied steam to the engine; the fifth was used to run a Cameron pump, to supply air under the main valves of the pumps and to heat the building. The gauges in the boiler room showed 68 to 70 lb. pressure, and a remarkable peculiarity observed was, that the fifth boiler showed the same pressure and received the same attention and firing during two visits, extending over a period of more than three hours at each visit. (The coal used under this boiler was not weighed.) The attention of one of the experts was called to the fact of this pressure, and the reply was, that the gauge was not correct. Then attention was called to the fact that the other boilers were carrying 70 lb., and the reply was, that those gauges, also, were not correct. It will be recollected that the contract limited the pressure to 60 lb. It seemed strange that experts were allowing the use of gauges on five boilers during test that were acknowledged to be incorrect. Observation also showed that the connection between the fifth boiler and the steam pipe was not broken. It is not said that this valve was open during the test; *but who can say that it was closed during all the time of the test?* How much more satisfactory it would have been to all concerned had this joint been broken, and all doubt removed.

After the test all the five boilers were found badly burned, and oddly enough the fifth boiler, that had nothing to do but supply a few coils of pipe, and run a Cameron pump, was found the most badly burned of all.

December, 1876, 11 A. M. *Steam Gauge*, 55. *Vac.* 12¼. *Revs.* 10.



Initial Steam Pressure 78·75 *lb., 3d Period.*



Recurring again to the question of pressure: one of the cards—two of which are sent with this communication—shows 78 lb. initial pressure. The other card shows the work of the engine under a head of about 95 ft., the ordinary, every-day work of the engine. This card shows probably the basis on which the contractors bid for the engine; having built three for the city previously. On this basis the price paid for the engine, $243,500, does not show such a discrepancy in the bids as might, at first sight, appear; for if one-half be added to the price paid, to make the engine of sufficient size to give the requisite degree of expansion, the sum would be $365,250, differing not very much from the average price bid by competing builders It is quite evident that the successful bidder had

assurance that a head of 95 feet would be the working maximum required, and bid accordingly. It is very probable that some of the higher bidders intended to steam-jacket the cylinders of their engines; while the engines under discussion are jacketed on the bottom heads of the low pressure cylinder only

It may be proper to inquire why the engineer planned for a head of 155 ft. when 95 ft. is the ordinary sinking head; in fact for many years the average head has been much lower. An engine is, or should be, designed for a uniform head to do its best work; and calling for an engine for a head of 155 ft. was not good engineering. Mistakes of this kind have been too common in Chicago, and the city has paid dearly for them. The city has five pumping engines now in use, and the coal consumption is enormous; at least, $75,000 is thrown away every year in coal alone. No wonder the city groans under its heavy burdens. Some one is at fault; and, when the facts are fully exposed and realized, an indignant public will pour their wrath upon the authors of all this iniquity.

Now, as has before been noted, the contract required that the engine was to do its work with 60 lb. of steam. As we are discussing the contract requirement, the addition of 24 per cent. (from 60 to 78 lb.) to the permitted pressure, is quite an item in favor of the engine.

It may be well here to call attention to the following figures, of the first test, obtained directly from one of the experts, and *therefore reliable:*

First Period.

From January 18—2 P. M. / To January 20—9 P. M. } Duty, 73,871,031—Pres., 60 lb.

Second Period.

From January 23—12 M. / To January 24— 3 P. M. } Duty, 78,079,446—Pres., 60 lb.

Third Period.

From January 24—10 P. M. / To January 26— 7 P. M. } Duty, 77,889,768—Pres., 70 lb.

For 8 hours of the second period, duty reported, 70,254,055 by the expert on his watch.

It will be observed that during the first and third periods the duty increases as the pressure.

The second period includes the watch of one of the experts, who gives the duty for 8 hours, 70,254,055. Now it is pertinent to inquire why the duty, in a period of only 27 hours, should fall off 7,825,391 in 8 hours, in the middle watch. This requires the remaining 19 hours to give a duty of 80,679,446 to give the average duty, 78,079,446, for the whole period. It requires a large degree of faith to believe that the same engine, under test, supposed to be doing its best all the time, developed a duty of only 70,254,055 for 8 hours, and developed, in the remaining 19 hours, a duty of 80,679,446, with a pressure for the period of 60 lb. But carry this analysis a little further. The second period shows a duty of 78,079,446, with a pressure of 60 lb., while the third period shows a duty of only 77,889,768, with 70 lb. pressure. In other words, we are asked to believe that the same engine, working against a constant head, can develop, with 60 lb. pressure, a better duty than when working with 70 lb. My faith stumbles at such disregard of scientific facts. It is usually considered an axiom, in steam dynamics, that high pressure steam develops a better duty than low pressure. On page 43 of Chicago Public Works Reports, year 1876, the average duty of this engine under an average head of 103 feet for a period of several weeks is 65,000,000. Can it be possible that this engine, on a fair test, can give a duty of more than 99,000,000 working under a head of 155 feet, the expansion being reduced thereby nearly one-third, the cylinder unjacketed and fire surface not up to the usual standard.

If this first test will hardly stand fair and critical examination, how can we have any faith in the second, where no access to the boilers or pumps was permitted, and everything concealed as much as possible from inspection. This test has thrown discredit upon expert tests; the profession has suffered odium and ought to take cognizance of this test if it would keep its reputation unsullied. The inquiry may be in order, why were not the results of the first test submitted to the public. Messrs. Hermany and Whitman have a national reputation; and the mere fact of their being left off the second test throws suspicion upon it. Is it surprising that grave doubt exists as to the reliability of this last test? May it not be hoped that the results of future tests may be given in full—every weakness exposed, every excellence brought out; then, in time, will positive fact take the place of the present uncertainty. M.

THE METALLURGY OF NICKEL.*

By M. Badoureau.

INTRODUCTION.

The recent discovery of nickel mines in New Caledonia has given this metal a new importance, especially in France. I made, in the summer of 1876, a scientific tour in Italy, Austria and Hungary, in company with some of my fellow-students in the School of Mines, and succeeded in acquiring, directly or indirectly, the knowledge of a certain number of details relating to the metallurgy of nickel. These, with the reader's permission, I now lay before him.

In Italy, in the Val Sesia, near Varallo, several mines of nickel are worked. I visited two of them. The first of these is situated at Cevia, and belongs to the King of Saxony. It yields 800 tons of crude ore a year, which is concentrated as a matte in the Sesia Works, near Varallo. This matte is sent to Oberschlemma, in Saxony, where nickel cubes and cobalt blue glasses are made. M. Fey, the King of Saxony's engineer, was good enough to take me over the Sesia dressing floor, and to give me some brief details of the works at Oberschlemma. The other nickel mine I visited in the Val Sesia is situated at Sella Bassa; it belongs to Messrs. Havemann & Polemann. The annual output from this mine is 2,000 tons of ores, which are treated at the dressing floor at Scopello for nickel cubes and raw cobalt oxide.

In Austria there are only two nickel mines of any importance. The first is situated at Leogang, near Zell-am-See (Salzburg), and the second at Schladming (Upper Styria). From the Leogang mine were extracted in 1874 156 tons of ore, which yielded 37 tons of nickel. At the Leogang dressing floor is prepared speiss, part of which is retained for working up at home, and part sold. I did not learn of the existence of this mine and dressing floor in time to visit them; but I have taken from an article by Mr. Kleinschmidt, in the *Berg- und Hüttenmännische Zeitung* for 1867, some details concerning the metallurgy of nickel at Schladming. The mine yields 30 tons of rich ores a year, sent for treatment to Hopfriesen and Mandling. These three localities were visited by Mr. Fuchs in 1860, who drew up a description of them, which I have found it necessary to consult. After Mr. Fuchs' visit the works were considerably improved, but in 1867 operations were brought to a standstill for family reasons. One of the proprietors, Mr. Rudolph Flechner, has since then been engaged in managing a nickel mine at Sagmyra, near Falun, in Sweden. From Mr. Flechner I learned, among other things, that the Sagmyra dressing floor converts 6,000 tons of ore yearly into 100 tons of matts. The treatment of the matts is at present finished at the Victoria Works at Namburg, in Prussian Silesia, but will probably be finished before long at Sagmyra itself.

The State Works at Brixlegg, in the Tyrol, sometimes treat nickeliferous and cobaltiferous ores. At the time I visted them neither ore was under treatment, but the head engineer, Mr. Turner, gave me details, which will be found in their proper place in this monograph.

Near Dobsina (or Dobschau, as it is called in German), in Hungary, a large number of nickel and cobalt mines are worked. The largest, the Zemberg mine, yields 90 tons of rich ore a year and 300 tons of poor ores. The rich ore is sold to the Losonez Works, in Hungary, or the Oberschlemma or Iselon Works, in Saxony, or goes to Birmingham. The poor ores are concentrated in the Georges Works, at Gniletz, near Dobsina, the speiss produced being part sold and part transformed in the works themselves into nickel cubes and cobalt oxide. M. Kauffmann, the engineer, showed me the earlier part of the treatment at full length, but only gave me an outline of the treatment of the speiss. In 1867 Mr. Kleinschmidt published in the *Berg- und Hüttenmännische Zeitung*, an interesting paper, from which I have borrowed several details, concerning the metallurgy of nickel and cobalt at Dobsina. The Losonez dressing floor near Fulek, in Hungary, treats rich ores from Dobsina, speiss made at Leogang (Salzburg) and matts from Klefva (Sweden). At Losonez are manufactured nickel cubes, German silver and cobalt oxides. But, instead of explaining the method of their production, the manager of the floor sought to persuade me that he undertook nothing but the making of a rich speiss, the treatment of which was finished at Bärendorf. The Bärendorf works, which are in the neighborhood of Vienna, are managed by Mr. Krupp, a brother of the celebrated Krupp, of Essen. Entrance to these works is strictly forbidden. Not only are the products of the Losonez floor worked up at Bärendorf, but cube nickel is bought in England, cube and grain nickel in America, and powder nickel in Sweden, for making pure nickel, alloys of copper and nickel, and possibly also cobalt glass.

These are the sources of the information which I propose to lay before the reader, as to the treatment of nickel sulphides and arsenides. In this treatment are three distinct stages:

(1) Concentration of the ore by a series of jiggings and meltings, and formation of a matt or speiss.

(2) Transformation of matt or speiss into nickel and cobalt oxides by the dry or wet way.

(3) Reduction of the nickel oxide and silicatization of cobalt oxide.

I intend to take up each of these steps in succession, keeping open a separate chapter for the information I have been able to obtain as to the treatment of the nickel silicate from New Caledonia. The weights and measures throughout have been reduced to the metrical system. The lira and florin keep their theoretical values of 1 fr. and 2 fr. 50, although while I was in Italy the lira was worth no more than 0 fr. 93 to 0 fr. 96, and the florin in Austria was worth only 2 fr. 00 to 2 fr. 10.

Nickel minerals may be classed under three distinct types: (1) magnetic and nickeliferous pyrites; (2) arsenical minerals, generally rich in nickel and cobalt; (3) nickel silicate.

NICKELIFEROUS PYRITES.

As an example of this first class of ores may be cited those of Val Sesia. The mica-schists and gneiss are crossed near Varalla by a dioritic mass, 20 kilometres in length by 4 kilometres in breadth. The mass has a position N. 20° E., thus taking the direction of the Longmynd. In the diorite, and near its point of contact with the gneiss, are found veins which have the direction of the block of diorite, dipping toward the gneiss. These veins are filled in almost equal parts with magnetic Nickeliferous pyrites and hornblende, which is present in the form of half-melted globules. The whole country is furrowed with deep valleys, at the bottom of which these veins are met with. Unfortunately it is only on the summits of the mountains that they are found rich in nickel and cobalt. The altitude of the Cevia mine is 1,980 meters, while that of the Sella Bassa varies from 1,500 to 1,700. Rope ways are being tried, with the object of facilitating the descent of the ore. The composition of the ore from these mines is as follows:

	Cevia.	Sella Bassa.		Cevia.	Sella Bassa.
Hornblende	50·00	50·00	Co	1·00	0·36
S	28·00	28·00	Fe	20·00	20·00
Ni	1·20	1·44			
Cu	0·50	0·72	Total	100·70	100·52

It will be seen that the Cevia ore is richer in cobalt, but poorer in nickel. Quite by exception ores are met with containing from 4 to 5 per cent. of nickel and cobalt. Taken at the mine these ores cost from 20 to 25 fr. per ton. Powder is used for blasting, and one meter run of gallery is driven in twenty days. Carriage from Cevia to the works at Sesia cost 26 fr. 50 c. Carriage from Sella Bassa to the works at Scopello costs 12 fr. in summer and 20 fr. in winter. The ore costs about 50 fr. delivered at the dressing floor. When the ropes are fixed for the new rope road, the cost of carriage, with its proportion of general charges, will be brought down to 7 fr.

The Sagmyra ore is still poorer than that of Varallo. It is found in large veins in the midst of the granite. Two lodes are worked, which yield ores of the following composition:

	No. 1.	No. 2.		No. 1.	No. 2.
Silicated gangue	45·00	80·00	Co	traces.	traces.
S	31·00	11·00	Fe	23·00	7·00
Ni	0·50	0·80			
Cu	0·60	1·00	Total	100·10.	99·80

The ore which is richer in nickel is at the same time the one which is poorer in iron and sulphur. The lodes are easily accessible, so that they can be worked at a profit in spite of their poverty.

(TO BE CONTINUED.)

* Annales des Mines, 5e livraison de 1877.

THE WATER AND NAPHTHA GAS QUESTION.

By H. H. Edgerton.

Continued from page 198.

I have chosen to consider the non-illuminant gases of naphtha as a mixture of marsh and methyl, instead of hydrogen and methyl, the reasons not yet clearly enough developed to be presentable. A combustion analysis of the same gas being made before absorbing the illuminating gases, gave as follows:

Volume of gases employed	7·359	After pyrogallate potash	109·430
After adding air	144·764	Nitrogen in air added	108·606
After exploding	128·173		
After contact with potash	112·705	Nitrogen in gases	·824
Hence volume combustible gases	6·535	Contraction on combustion	16·591
Carbonic acid formed	15·468	Oxygen consumed	25,525

Deducting from the above the amount of carbonic acid formed, contraction and oxygen consumed, previously ascertained to be due the non-illumitants, the following data are obtained:

Volume of illuminants	2·861	Contraction	8·027
Burned to carbonic acid	9·282	Oxygen consumed	14·452

This I formerly calculated as ethylene and butylene, but I find

Ethylene	1·081
Butylene	·730
Ethyl	1·050

a better correspondence, as they give:

	Calculated.	Found.
Carbonic acid	9·282	9·282
Contraction	8·027	8·027
Oxygen used	14·448	14·452

This occurs from the fact that, in the previous calculation, the products of combustion of illuminants were calculated to correspond with 55.81 volumes of illuminants, instead of 43·779. It is stated that ethyl is not absorbable by fuming sulphuric acid nor by bromine, except in sunlight; but, as this gas more closely fills the conditions than butylene, I shall include it in the illuminants until satisfied it is not absorbable in a mixture as above.

Percentage composition, showing all the constituents:

					Specific gravity.
Illuminants	Butylene	11·170	43·778		1·595
	Ethylene	16·541			
	Ethyl	16·067			
Non-illuminants	Methyl	36·599	53·529		0·884
	Marsh gas	16·930			
	Nitrogen	2·292	2·700		0·954
	Oxygen	·408			
		100·007	100.007		1·198

The carbonic oxide, probably altogether an accidental product, is left out of the above.

The analysis as it appeared in 1871 was as follows:

THE FORT WAYNE NAPHTHA GAS, MADE BY THE GALE & RAND PROCESS.

		1st analysis.		2d analysis.	
Illuminants	Ethylene	37·54	55·81	38·28	55·81
	Butylene	18·27		17·53	
Non-illuminants	Methyl	30·21	44·19	30·21	44·19
	Marsh gas	13·98		13·98	

The nitrogen and oxygen, probably accidentally present; were left out. The difference does not alter any practical deductions to be drawn from either, for the illuminants in both contain the same amount of carbon; so do the non-illuminants. Hence the illuminating power deducible by LEWIS THOMPSON'S rule, which has been proved to be practically true, would be the same in either case. To those not acquainted with gas analysis, it is fair to state, that the small difference in data (furnished by a combustion analysis) between butylene and ethyl, might generally be considered within the limit of experimental error when performed, as was necessary in the above case, upon so small a volume as one-half a cubic centimeter of the gases. The very simplicity of the result of the decomposition would seem to be against the correctness of the supposition that the illuminants embraced so few gases, but it must be remembered that the gas was made by the GALE and RAND process, which is certain to yield far simpler results than any other yet in practical operation. The decomposition becomes more and more complex, the greater the number of members of the petroleum series present. The specific gravity of the mixture, by calculation, was 1·198. The specific gravity of another sample of gas made by the same apparatus was—

	1·034
Non-illuminants	·838
Illuminants by difference	1·252

As nearly as I could arrive at it by test on street gas, the specific gravity of New York Mutual oil gas alone is ·940 to ·980. It may be a trifle higher. It could be ascertained exactly by an analysis at the works; but after leaving the works, mixed with coal gas, it can be ascertained only approximately. The above will not vary two per cent. from the truth, and is rather under than over. Gas made by the New York Mutual Gas Company, as furnished at 59 East Thirty-fourth street, at various times showed as follows:

1875.		Specific gravity.	Pr. ct. oil gas.	Pr. ct. Coal gas.
October 6	9:30 A. M.	0·611	39·0	61·0
" 7	7:30 A. M.	0·589	35,0	65·0
" 7	10:00 P. M.	0·588	34·8	65·2
" 8	8:30 A. M.	0·636	43.7	56.3
" 8	11:00 P. M.	0.619	40·5	59·5
" 12	10:00 P. M.	0·583	33·9	66·1
" 19	10:25 P. M.	0·605	34·6	65·4
" 24	9:30 P. M.	0·601	37·2	62·8
" 25	8:00 A. M.	0.598	36·7	63·3
Mean		·603	37·6	62·4

These observations, made at random, are turned into percentage of naphtha gas and coal gas, based upon naphtha at 0·940, coal gas at 0·400.

The fluctuations are undoubtedly less than here shown, as there are three sources of error, namely: Error of observation; the coal gas might be a little heavier or lighter than assumed; the naphtha gas be lighter or heavier by a small amount. These sources of error might all occur plus or minus together.

New York Mutual Gas.

	Sp. gr.	Per cent. naphtha.	Per cent. coal.
1875. June 27, 10 P. M.	0·685	52·8	47·2

I make a special note of this observation, as at that time I was told by an owner of Manhattan stock that another very large owner, a person in high authority, had, as a particular favor, told him that the cat was out of the bag about the Mutual Gas Company; that finding naphtha a humbug and a delusion, they had decreased the percentage to a merely nominal amount, "about 10 per cent. or so." I had heard such stories so often that I wondered at last if the "three wise men of Gotham," who "went to sea in a bowl," were not Manhattan gas stockholders, with an old Havana trader as captain.

Lowe Gas at Phœnixville, August 12, 1875. 6.45 P. M.

	Possible margin of error.
At the hotel specific gravity	0·677 ± 0·01
Per cent. of illuminants	12·19 ± 0·2
Candle power, 5 cubic feet	14·12 ± 1·2
Carbonic acid	6·0 ± 0·01
Candle power for each, 1 part of illuminants	1·16

Mr. STIMPSON, in the *Gas Light Journal*, June 16, 1871, shows that 6 per cent. of carbonic acid would destroy about 25 per cent. of light, or say, more properly, 4 candles' light. If the carbonic acid had been properly removed from the above, we should then have found 18 candles' light for 5 cubic feet, or 1·5 candles for each 1 per cent. of illuminants.

Sunbury, Pa., August 13, 1875.

Gas made from naphtha by Mr. Patton's process:

Specific gravity	·803 ± ·010
Candle power, 1·5 cu. ft.	14·00 ± 1·2
Candle power, 5 cu. ft.	46·62 ± 3·7
Per cent. of illuminants	23·88 ± 0·2
Candle power each per cent	2·00

This gas had several per cent. of air added, to prevent smoking.

Trevorton, Pa., August 14, 1875.

Gas made in a small apparatus after the Patton plan; gas made from kerosene:

Candle power of 1·7 cu. ft.	14·5 C ± 1·2
Candle power of 5 cu. ft.	42·6 ± 3·6
Per cent. illuminants	29·04 ± 0·2
Candle power for each 1 per cent	1·46 ± ·12

Same gas:

Candle power, 1 cubic foot, 1" pressure	9·25 ± ·7
Candle power, 5 cubic feet	46·75 ± 3 5
Specific gravity	·864 ± 0·2
Illuminants	29·47 ± ·2
Candle power, 1 per cent. illuminants	1·56 ± .12

Easton, Pa. August 17, 1875, 7:30 P. M.

Gas from coal naphtha and water said to be:

Specific gravity	0·643 ±
Carbonic acid	1·97 ± ·01
Illuminants	7·86 ± ·20
Candle power, 5 cubic feet	14·2 ± 1·20
Candle power of 1 per cent	1·80

New York, August 18, 1875.

Mutual gas at 59 East Thirty-fourth street:

	Per cent. oil gas.	Per cent. coal gas.
Specific gravity	·694	45·6
Per cent. of carbonic acid	2·51 ± ·01	54·4
Per cent. of illuminants	11·41 ± ·02	
Candle power, 5 cubic feet	30·0 ± .4	
Candle power, each 1 per cent	2·63	

New London, Conn., August 27, 1875.

Oil-water and coal-gas (Harkness gas), at Hotel, 8:30 P. M.;

Per cent. illuminants	4·37 ± ·2
Illuminating power	10·62 C
Of 1 per cent. illuminants	2·43

August 28, at works, water-gas alone:

Carbonic acid	1st, 5·90 ± ·01
" "	2d, 6·04 ± ·01
Specific gravity	·527

Examined afterward from a sealed tube at No. 4 Murray street, New York, with Mr. HINMAN'S apparatus:

Carbonic acid	6·10
Carbonic oxide	40·84
Hydrogen	53·05
Calculated specific gravity	·524

This gas has been passed through lime, but, either owing to extra dryness of lime or to its having become saturated, there was absolutely no action in removing carbonic acid.

Specific gravity of oil and water gas, mixed	·683
Specific gravity of oil, water and coal gases	·481
Oil and water gas had carbonic acid	4·82
Illuminants	8·88

The percentage of illuminants found in the gas at the hotel (4·37) would indicate but a small percentage of oil and water gas in the town supply.

New York, October 23, 1875.

Metropolitan gas, at No. 127 East Forty-sixth street, 8:20 P. M.

Specific gravity	·414 ± ·01
Carbonic acid	·96 ± ·01
Illuminants	4·54 ± ·20
Illuminating power	13·25 ± 1·2
" " of 1 per cent.	2·92

The Engineer of the works, Mr. HERZOG, at this time informed me, that he was using "naphtha to enrich;" and that he estimated he was obtaining about 200 feet per gallon yield. The above would seem to confirm his estimate. Prof. CHANDLER, in his lecture to the gas men, informed them that "naphtha used to enrich might not be unprofitable; used as above, it certainly would not tend to impair the resources of the company. I believe there are a number of companies using "naphtha to enrich;" some very considerable works getting along on a barrel a day ($365.00 a year—cheap enriching that!). A professor should be employed, however, to let the consumers know that their gas is enriched.

New York, October 24, 1875, *at* 59 *East Thirty-fourth street*, 9.30 P. M.

	Per cent. oil gas.	Per cent. coal gas.
Specific gravity	·602 ± 0·1	37·4 62·6
Per cent. illuminants	9·47 ± ·2	
Carbonic acid	1·71 ± ·01	
Illuminating power 4·3 c. f.	22·7 ± 2·0	
" " 1 per cent.	2·77	

Part of the apparatus used in the above tests was of such a portable form that I have allowed quite a large margin for possible error. The probable error was far within the limits. I did not use the Sugg Referee or Sugg London as a test burner. Why should it be used? The consumer could by no possibility use more than one such burner in a hundred; it has a chimney to clean, flickers and smokes in the slightest current of air. It has but two legitimate uses, viz.: For a library or writing desk, and to tickle certain parties with the idea that their gas is two or three candles better than it actually is. On the contrary naphtha gases give by several candles better light in the improved batwing and fishtails than in the test burners.

(TO BE CONTINUED.)

BOULDER COUNTY, COLORADO.

By F. L. Vinton, Mining Engineer.

Special Correspondence Engineering and Mining Journal.

Three counties of Northern Colorado, lying on the base of the Rocky Mountains toward the east, are justly famed as one continued labarynth of valuable metallic mines. Two great belts of fissures carrying ore run through these counties N E., S W., nearly vertical, in solid walls of gneiss and granite, with gangue of flint, talc and all the spars. The southern belt is characterized by gold and the telluride or selenide of that metal, the northern by native silver and its various ores; they are parallel to each other, and contiguous, but distinct, although at their zone of contact they give mines that furnish both the precious metals. Gold and gold ores are not usually so regularly distributed in their veins as silver and its combinations: wherefore opinions may differ upon the comparative value of the two kinds of mines; but there are enough of both in Boulder County to satisfy various tastes, and the indifferent may well hesitate in admiration between the lumps of Caribou silver on the one hand and the gold of Sunshine on the other. If, of the three counties, Boulder, Gilpin and Clear Creek, the first be not the richest, it certainly surpasses in variety of mineral wealth, and transcends all in picturesqueness. The scenery of Boulder Cañon is made up of stately crags, well timbered with pine and cedar down to a torrent below. It merits the guide book epithets "sublime" and "beautiful."

Boulder Cañon and its tributaries' cañon routes into the mining regions are not yet subjugated to the rail, but on the excellent roads that thread them all, are seen each day the traditional stage coach and elegant modern vehicles, mingled with the characteristic ore wagons, these last laden, when coming down, with about two tons each of mineral, worth sometimes a thousand dollars per ton.

A ROAD PAVED WITH GOLD AND SILVER.

From the plains of Boulder up to the head of these gorges the way is, in fact, paved with gold and silver, but not to be gathered by stooping unless with pick or drill. This warning is on the road at every step, for the mountain sides are burrowed with tunnels and prospect holes, some worked, some abandoned, but all the sign manual of labor. The traveler sees not a hundredth part, an invisible mining population swarms in every direction and delves incessantly. One would sooner call their perforations innumerable than attempt to number them. Of the many active and successful mines I can only at present mention a few, beginning, naturally, with those near Caribou at the head of the Cañon. These magnificent silver mines are, in great degree, familiar to the public, through the comprehensive *résumé* and capital illustrations of them published in the ENGINEERING AND MINING JOURNAL of August 11, 1877. At the present date there is even more movement prevailing in them than then, but, as ever, the unrivaled silver producer of the district is the celebrated Caribou Mine with its adjunct mill, both operated under the direction of a most able superintendent and cordial gentleman, Mr. EBEN SMITH. The mill is amalgamating, but contains also a plant for leaching, which will be used when pyritous ores are more plentiful than now in the vicinity, Caribou Hill is blistered with dumps, and riddled with shafts, drifts and tunnels: among these last works of mining art, the Consolidated Caribou-Belt Tunnel is of the handsomest, and most happily located. It pierces the contact zone of the two great belts, and has already cut three valuable lodes of free gold and silver ore. Its projected length is three thousand feet, and its face is seven by seven, but, run, as it is, with the Wood drill, the favorite power-drill here, it will not be tardy in reaching the numerous other well-known veins to which it is aimed. No enterprise is more to be recommended in our mountains than a sound tunnel project; a tunnel claim in Colorado is three thousand feet in length by fifteen hundred broad, and on this width it possesses all the lodes it intersects except those previously claimed, recorded and worked in proper form. In many cases those also might preferably work through an advantageous tunnel, on royalty, rather than by their shafts, for a tunnel is the best kind of working adit on a real lode, though bad for prospecting into a veinless mountain as we sometimes find here.

THE SANTA LA SARIA MINE.

The silver mill at Nederland gives the life to that pleasant little hamlet that steam-pipes and smoke-stacks always bring, while there, too, they hardly can dispel the romance of environing nature. A short distance from Nederland is the Santa la Saria Mine, lately leased by SCHEYER & CO., large reducers of ore in Denver. It is now started up in full force under the direction of your correspondent and will be developed continuously with two shifts, and stoped as fast as convenient. This mine produces exceedingly rich ore, excellent for leaching, and has just struck a rich chimney of gray copper, 18 in. thick. Adjacent to the Santa la Saria is the Washington Avenue Mine and mill. The activity there at this moment is in the mill alone; it is leaching a rich dump, and with profit, I believe. Certainly so handsome a mill deserves success. In that neighborhood, too, are several promising mines yet in infancy. Among these the Mayflower will bear mention; fine ore is to be seen in its shaft.

Near here commences Pennsylvania Gulch, on which is the Centennial Mine of free gold, now putting up stamps.

THE GOLD MINES OF BOULDER.

The gold mines of Boulder sustain their fame. There can be no doubt that some of these are extraordinary. The Smuggler, for example, has produced fabulously-rich ore, and with remarkable regularity. There are leases on that mine to-day paying fifty-five per cent. royalty. The Golden Age Mine, adjacent, is running stamps on rich ore; the float of that fissure gave last summer some of the finest specimens of free gold I have seen in quartz. The great American Mine, under our skilled and learned friend, Professor J. ALDEN SMITH, seems in the way of absorbing some of its neighbors. The expansion of such mines as the American, typical in conduct and success, is proper and beneficial to all; it takes the country out of the narrow sphere of mere prospect mining, and exhibits the advantage of large methods and wide combinations. Great production is the very basis of economic exploitation. Boulder County has mines of copper, but none of the State are as yet appealing for description. Neither have I had occasion to examine the numerous and rapidly-developed coal banks of this favored county; the maps of the mines that I have seen represent a thoroughly good system of mining, and I am aware that the extraction of coal is extensive, increasing and remunerative.

COST OF MINING.

Mining here is now, to a great extent, done by contract; tunnels, shafts and drifts universally so, at prices ranging from $8 to $20 per foot. Stoping is sometimes contracted for by the fathom, at from $10 to $18. Forge work, ore sorting and most outside business is paid by the day at from $2 to $3. The companies furnish all mining supplies, charging use and waste. Men are boarded handsomely by some good wife at the mine for $6 per week.

When we have dressing mills in Boulder County, concentrating for $3, and at not more than 20 per cent. loss, as I believe quite possible, our properties will double in value. For simple concentration of our silver ores, it is believed that crusher rollers and Rittinger tables are about the best; at any rate, we cannot stamp them, because their slimes elude all our machinery up to this time. Slime washers are said to work well on our gold ores. I have had no opportunity to judge of that, but I have discovered that the true way to obtain a clear view of most mining matters is to study them purse in hand.

Boulder County has ranch land on the plain, and many picturesque little ranches nestled about in the mountains. Here, too, is the site of the State University, and a good place for a school of mines, were it not that any professor worth miners' wages would soon be out of it and in better business, but for those who like a strong dash of the practical in theirs, we can recommend our existing institutions, where a good, sturdy student can get two dollars and a half a day and take a first-rate four-years' course of passing dirt the first, sorting ore the second, turning drill the third, and fourth, swinging the striking hammer for a *projét*. Of assayers and surveyers the country is full, and as it has already been well nigh ruined by fancy metallurgists, there is no wild call for them.

BOULDER CITY.

The city of Boulder is the depot of two railroads, the Colorado Central, and the Denver, Pacific & Boulder Valley Branch, each connecting with the Union Pacific R. R., at Cheyenne on the north, and with Denver on the south, some forty miles away; freight to Denver from Boulder is two dollars per ton; freight in the mountains would be comparatively cheap if the State would raise the toll; but the railroads will soon do that. A special benefit to the many mines of Boulder County will be the Boulder Midland & Central Railroad. Our hopes are strong that Prof. N. P. HILL will lend his weighty influence to that project, for it would insure its construction and create another real artery to Denver, which city will undoubtedly be the heart and capital of the State. Boulder is a handsome city, with fine residences, hotels and business centres, and always presents a very spirited air. Like all the cities of Colorado, it is kept with good order, good manners and good sense. I do not believe there is another State in the Union where the inhabitants, as an entirety, and particularly as a mining population, are so well educated, and generally so seemingly well bred as here. The city of Denver, above all, is charming in society and surroundings. She is fated to become a met opolis, yet let her not waste time in emulating Paris as a caravansary for wayfarers, or Nice as a hospital for invalids because her climate is unsurpassed, but anchor to the mountains with an iron grip, draw their gold and silver to her refineries, and let the rich and beautiful passes of Boulder County be the next tributaries to her growth.

NEW PATENTS.

The following is a list of the new inventions relating to Iron, Coal, Mining Machinery, Chemical Apparatus and the treating of Precious Metals, etc., from the official *U. S. Patent Gazette*, for week ending March 3:

No. of Patent.	*Title of Invention.*	*Name of Inventor.*	*Residence.*
200,815	Boiler Furnaces	Wm. Ayres	St. Peter's, Pa.
200,820	Gas Retorts	James Burns	London, Can.
200,834	Processes of Manufacturing Artificial Stone	Frederick Koskul	Philadelphia, Pa.
200,836	Centering Devices for Surveyors' Transits	Wilhelm L. Martens	College P't, N. Y.
200,855	Valves for Steam Engines	Ezra Cope	Hamilton, O.
200,864	Coal Oil Stoves	W. Hales & J. Gray	Albany, N. Y.
200,881	Steam Vacuum Pumps	D. M. Terry	Jersey City, N.J.
200,901	Machines for Compressing and Purifying Air	Isidore Dreyfus	New York, N. Y.
200,913	Oil Cook Stove Lamps	H. L. Howse	Sacramento, Cal.
200,914	Pneumatic, Hydraulic or Steam Pressure Apparatus	John W. Hyatt	Newark, N. J.
200,923	Lift and Force Pumps	Neal Malmquist (a)	New York, N. Y.
200,936	Coal Drills	J. J. Rigney & Co	Shamokin, Pa.
200,968	Elevated Railways	Alexander Brandon	New York, N. Y.
200,970	Gas Engines	James Brady	Brooklyn, N. Y.
200,973	Glass Furnaces	Jas. M. Brookfield	Brooklyn, N. Y.
200,983	Steam Radiators	J. H. Cunningham	Chelsea, Mass.
201,028	Manufacturing of Caustic Alkalies and Preparations of Alumina	Carl Löwig (b)	Breslau, Silesia.
201,032	Stone Preservative and Renovating Compounds	Alex. McLean (c)	Toronto, Can.
201,040	Telephones	John E. Smith	New York, N. Y.

(a) Assignor to himself and John Loyd, New York, N. Y.

(b) Assignor to Gustav Löwig, Dresden, and Friedrich Löwig, Goldschmieden, Germany.

(c) Assignor (two-third right) to J. W. G. Whitney and Benjamin Morton, Toronto, Canada.

LEADVILLE, COLO.—COLORADO'S LATEST EXCITEMENT—A "CAMP" THAT BIDS FAIR TO BECOME ONE OF THE MOST SUBSTANTIAL IN THE WEST.

Special Correspondence of the Engineering and Mining Journal.

Perhaps the most difficult part of my task in describing to you this new wonder of the State will be to keep within the bounds of reason prescribed by the ENGINEERING AND MINING JOURNAL, and not say so much about this truly worthy region as to border on the realms of puff.

Though the basis of the excitement here is not of such a glittering nature as that which attracted 10,000 souls into Wyoming, about Deadwood, yet it is apparently more substantial, on account of quantity and extent, and, if an opinion is permissible, I am inclined to think that there will not be so much "dead wood" about this place in the future, with all due respect to Wyoming's natural resources and Sitting Bull.

The name of the town has a curious little history of itself, and is an example of the ruling passion strong in *life*, of everybody wanting to have his own way. It was incorporated by one faction as the town of *Agassiz*, they, no doubt, believing that the towering fame of the great naturalist was a fitting emblem of the future prosperity of the camp. Another faction called it *Harrison*, in honor of the most worthy President of the St. Louis Smelting Company, also emblematic of powerful prosperity. The third, last and abiding choice, however, was that of the Hon. H. A. W. TABOR, now Mayor of the town, backed by Uncle Sam, who named *Leadville* as the post-office, and the majority of the miners, who seemed to think that this name was most emblematic of the actual facts of the case, with reference to the product of the mines, which is largely lead. One involuntarily calls to mind the wisdom of the great dramatist, about "What's in a name?" (We wont mention swells.)

Leadville is located in California Gulch, Lake County (so named after two lovely sheets of water lying in the valley of the Arkansas and called Twin Lakes), and is about 150 miles from Denver, southwest. The place is reached by two routes from Denver, one *via* rail to Morrison, and thence by coach some 130 miles, the other *via* rail to Colorado Springs, and thence *via* coach about the same distance. In summer the district presents many attractive features, even to the traveler and pleasure seeker, not the least of which are the abundance of game in the valley of the Arkansas and the splendid fishing in the river and lakes. In winter the abundant snows and cold weather of the Rocky Mountain range make it rather inaccessible, though it hinders business but little more than in many of the Eastern towns during this season. Although the JOURNAL, in a former letter, gave a very correct (short) statement of the early history of California Gulch, I have thought that some interesting details characteristic of those early times would not be amiss.

EARLY HISTORY OF CALIFORNIA GULCH.

The gulch was first opened in the spring of 1860 by a band of prospectors from Gilpin County, in this State. The first shaft was sunk in the creek about two and a half miles above Leadville, where now the little town of Oro is located, and the panning from the grass roots down exceeded the gold seekers' most sanguine expectations. Old timers say that the stampede to this region which followed when the discovery became generally known was never exceeded by the wildest emigrations in California or Montana. It took but two or three months to accumulate a population of some ten thousand men in and around the gulch. Each claim embraced but 100 feet square, although the original discoverers, four in number, were allowed 200 feet each, the extra 100 ft. being a sort of "reward of merit" for the discovery. The only water at first obtainable was that which flowed in the gulch itself, and, not being very abundant at best, it was used over and over again, so that by the time it reached the lowest claims it had the consistency of liquid mud. Every man was obliged to dump on his own ground and to deliver the water at the boundry line of his next lowest neighbor's claim, developing no little calculative genius with reference to the laws of gravity and the strain a given number of cubic inches of timber would stand, and causing no end of hard work and tall swearing. The common riffle or sluice box, the "Long Tom" and the "Rocker" were all used to wash out the "dust," and in spite of the difficulties in handling the dirt, some of the clean-ups were simply fabulous. As much as $1,900 a day was taken out of some claims, and one in particular yielded over $100,000 in about sixty days. The laws that governed the camp in those days were those framed by the miners themselves, who believed they knew best what would reach the different cases in the fairest and most summary way. No fooling in those times with a court, a jury, half a ton or so of law book's, and half a dozen high-priced legal lights. If Smith invaded Brown's fancied rights, an arbitration committee was called, the matter discussed in short meter, and in ten minutes Smith or Brown were given the choice of yielding the point, leaving the camp or receiving the delicate attentions of a hempen cord or an ounce of lead. The characteristic of those early pioneers was that of an utter abandon, and almost indifference to fate. To-day Cæsars and Crœsuses; to-morrow, on account of the irresistible fascinations of the gambling table, the gin shop, and—worse yet, like wandering Jews, yet always with hearts generous, kind and free, and only checked by the limits of their purse, they formed a rather peculiar and erratic community, with a reverence for the truly pure and good that was almost touching. A child could move the hardest of them, but an army of foes could not budge them.

Gambling and hard drinking were the ruination of many a man who had but to turn over the ground to fill his pockets with gold, and it is stated that only one individual of those who owned the richest claims in the gulch in 1860–61 is to-day enjoying the results of his splendid opportunity. Some literally threw their money away in all sorts of licentiousness; others lost theirs in injudicious investments, and perhaps some lost theirs in the savings banks! Church services were held in the gambling halls, and were largely attended.

The yield of the gulch in "dust" is estimated at about $5,000,000 from some 33,000 ft. of claims. When the war of rebellion broke out in 1861, California Gulch furnished its quota of troops to both sides, the number of sympathizers for North and South being about equal. At times partisan feeling was carried to a high pitch, and on one occasion, it coming to an issue, the flag of the Union was unfurled and remained flung to the breeze, until it was definitely understood that it would not be taken down by violent hands. No bloodshed occurred, however.

The bearded, gray-haired veteran in life, and the unshaven stripling, fresh from the surroundings of a refined home, vied with each other in their search for a "home-stake," which latter compound word means "enough to go home and live happily the rest of one's days." It was often found, but in most instances by the wrong man.

Leadville now possesses a newspaper, the Lake County *Reveille*, the first number of which appeared on the 23d of February of the present year. It is under the enterprising editorship of Mr. R. S. ALLEN.

Lode mining did not begin here until 1866, when the renowned Printer Boy was discovered, just above the town of Oro, and the richness of this find tended to re-awaken the lulling interest in the district that ensued after the first flush of the gold-dvst fever had subsided. What a pity; what a shame; that so fine a property should be tainted with the breath of the demon of "mismanagement" (a mild term for downright *peculation!*) and be left to stand idle these last years, a monument of the sordid ambition of men, and a shadow across the path of honest, legitimate mining enterprises. With a shaft but 300 feet deep, and ore from which the gold was easily saved in an arastra or a stamp mill, and which sometimes yielded over $100 to the pan, is it not reasonable to suppose that some very "peculiar" disposition of the $250,000 the mine has yielded must have been made?

Mr. J. MARSHALL PAUL, the present owner of the mine, is seeking to raise capital to start up again and work the mine legitimately. It requires some money to re-open a mine that has been standing idle very long, and we would wish Mr. PAUL good speed in his effort. A tolerably good proof that the mine is not "worked out" yet is that I heard some of the Cornish boys, who had worked there before, remark. "We would go to work on the *Printer Boy* again mighty quick, and not a bit o' fear of not getting our money, you bet," and when those cautious fellows say that, it means something.

The renown of the *Printer Boy* brought in another tide of "home-stake" seekers, but this time every one sought a gold *lode*, but not one did they find that could compare with the *Printer* (they always take the *lead*), though several fine silver-bearing veins were found here and there, notably the *Homestake*, but none of them have been very extensively opened, and not one of the searchers had the faintest idea of the treasures that lay within their grasp, and which are to-day causing the third excitement in this truly remarkable district.

MR. KEELY AND HIS MOTOR EXPLODED.

A dispatch to the New York *Times*, dated Philadelphia, March 28, says:

"The Keely motor, which has created so much comment, has been subjected to a severe test by Mr. J. B. KNIGHT, Secretary of the Franklin Institute, and a well-known scientific engineer. Mr. KNIGHT'S examinations have extended through a period of five months, and, as a result of his labors, the alleged wonderful Keely moter takes a back seat, being under a cloud. Mr. KNIGHT intimates that the gauges on the moters registered apparently 11,000 lb. to the square inch, but he has reason to suspect that the gauges were altered. He holds that the machinery is made large and massive for the purpose of misleading those who care to view it and every one else, and that there is no occasion for it. In operating the engine no vacuum was produced or utilized as claimed.

"Samples of Mr. KEELY'S 'vapor' were submitted to C. M. CRESSON, M. D., the well-known chemist, for a careful analysis. By his report it was seen that the so-called 'vapor' is merely atmospheric air, and that the pressure in the tube was only 225 pounds, instead of the 1,200 pounds claimed. In conclusion, Mr. KNIGHT drew the following conclusions: First, that the machine called the 'multiplicator,' with its attachments, including the so-called 'reacting device,' are not capable of producing the effects claimed, and that their enormous strength is entirely unnecessary in sustaining the pressure to which they are subjected, but are rather calculated to astonish and mislead those who witness his experiments. Second, that the extreme high pressure claimed was not produced, probably in no case exceeding 500 pounds per square inch, and that the readings of the gauges and weighted lever apparatus were incorrect. Third, that the so-called vacuum was not produced by the condensation or absorption of the alleged vapor, but by mechanical means, such as a previously-exhausted chamber or its equivalents. Fourth, the substance used or claimed by Mr. KEELY to be a new vapor of his own discovery, is simply atmospheric air which had been previously compressed and stored up in the various hollow spheres and other chambers of the apparatus in the intervals between the experiments. As might be expected, Mr. KEELY is angry at these revelations, and the stockholders, who have expended a million of dollars, are astonished. KEELY proposes to give two public exhibitions a week with the motor in an endeavor to demonstrate that it is not a fraud."

THE CAMBRIA IRON COMPANY now manufactures in Johnstown its own spiegeleisen, from mixed foreign and domestic ores, using one furnace, which produces nearly 600 tons a month.

MINERAL STATISTICS OF NEW SOUTH WALES.—The Hon. W. H. Suttor, Minister for Mines, in his speech to the electors of East Macquarie, referred to the mining statistics appended, and claimed that mining in this colony required only a little energy to place it on a far sounder footing than it at present occupies: Gold: Area of known gold-bearing formations, about 35,500 square miles, or 22,720,000 acres; area opened up but not worked out, less than 5,000 square miles, from which £32,000,000 sterling has been taken. Coal: Area of coal formation, about 23,950 square miles, equal to 215,328,000 acres. Suppose half this area to contain workable coal, it is equal in superficial extent to the coal deposits of Great Britain, and double the superficial extent of the coal deposits of France, Spain and Belgium combined. From one seam, within an area of 2,000 acres, coal to the value of £8,278,058 has been raised, from which an idea may be formed of the enormous value (thousands of millions) of our coal deposits. Tin: Area of known stanniferous deposits, about 8,500 square miles. Value of tin won, £1,867,410. The area opened does not exceed eight square miles. Copper: Area of known cupriferous formations, about 6,713 square miles. Area opened scarcely appreciable. Value of copper won, £1,566,232. Mineral leases: The amount of gold-mining and mineral lands under lease or promise of lease, under the Mining Act of 1874, is set down at 17,696 acres; that taken up under the Gold Fields Act of 1866 was 5,581 acres. Mineral Selections made under the Crown Lands Occupation Act of 1861 amounted in area to 99,634 acres.

THE NEW WORKS AT CLAUSTHAL FOR DRESSING ORES.

By John C. F. Randolph, M. E.

[*Concluded from page* 204.]

The Stamp House.—The plan of this building is shown by Fig. 47, and it is designated (11) on the general plan of the works. The arrangement of this building is the most interesting of any in the works, and both the apparatus employed and the method necessitated by them are open to gravest professional criticism and scrutiny. In this building, and in that which we have denominated the auxiliary washing house, are presented points which are quite the most unique in the works, and in the complicated mass of apparatus presented in them we are brought face to face with the unyielding conservatism of the Hartz. In designing this method for handling fine sands and slimes the traditions of the region have been followed closely, and although some apparatus of new form has been sparingly introduced, such buildings as the stamp house and the auxiliary washing house would probably never be initiated in any other locality. On the back side of the building, toward the fine jigging house, are the stamps, in batteries of 22 head each, and 8 batteries in all, four batteries being on either side of the large CORLISS engine *S*. Behind the batteries are the large feeding hoppers *a*, which, with their mechanical feed, have been already described. The drawing shows the stamps in batteries of 10, but these batteries have been since augmented to 22 head each, as has been noted. The stamp ore from the picking houses comes to the stamp house by a tortuous route, being lowered from building to building by the elevators, and traversing the whole flight till it enters the upper part of the stamp house from the ground floor of the fine jigging house (8) above. The other material for stamping, the finely knit middling from the fine jigging house, enters the stamp house by the same track. On account of the size of the plates, only the plan of the stamp house is shown, and not the elevations or sections, and on some accounts their absence is to be regretted. Being thrown into the hoppers, fed mechanically to the stamps and stamped, the ore issues from the fine screens of the batteries as a fine pulp or muddy water. The pulp from two batteries of 44 stamps is conducted by launders to a larger launder, *b*, which leads it to the classification apparatus composed of the pointed boxes *e*, *f*, *g*, g^1, *h*, h^1, h^2, h^3. The coarsest sands from the boxes *e* and *f* go to the two sieved sand jigs, *c* and c^1 and are jigged; those from the boxes *g* and g^1 are jigged on the three-sieved sand jig d^1, and the sands from *h*, h^1, h^2, h^3, are jigged on the three-sieved sand jig d^1. The overflow from the classification apparatus, from which most of the sands have settled, is led by a launder, *n*, to the Rittinger spitzkasten *o*, *o*, *o*, etc., and the overflow from the last one of the series is led off to the slime pits *l*, *l* below; but in case of having to put the spitzkasten out of work, it can be led directly to the slime pits without passing through the spitzkasten. The turbid water from the sand jigs *c*, c^1, goes to the labyrinth *M*, on one side of the classification apparatus, and that from the jigs *d* and d^1 to the corresponding labyrinth *M*, on the opposite side of the classification apparatus. After circulating in these labyrinths and depositing slimes as far as possible, it is led off by launders to the slime pits. Any three boxes of the labyrinth can be separated from the others at any time, for removing the deposits, without throwing the others of the set out of work. The slimes settling in the points of the Rittinger spitzkasten *o*, *o*, *o*, etc., are delivered by rising pipes into a launder, parallel with each set (shown by series of fine lines below the spitzkasten), and from it are discharged by a launder, *p*, at right angles on the head of the upper convex buddle *q*. The tailing from this buddle is washed down on the head of the lower buddle *r*, on which the operation is repeated. The products are washed into the receiving boxes adjoining the buddles, from which the turbid water is led to slime pits and clearing tanks outside. The three non-continuous tables *m*, *m*, *m*, complete the apparatus for each pair of batteries, the slimes being drawn from the boxes of the two labyrinths to two of them through launders. The third one is reserved for retreating middlings and treating the deposits from the slime pits outside, the various clearing tanks in the works, and also the middle products from the sand jigs. The power for this building is given by the 150 horse-power CORLISS engine *s*, being transmitted by the main shaft *t* to various cam-shafts, counter-shafts, etc. This engine also drives two double-acting pumps, which force the water from the tank *v*, below the floor, to a distributing tank, *w*, in the upper part of the building, from which it is distributed to the points needed by the main pipes *g*, *x*, *x*, and various connecting pipes.

The Auxiliary Washing House.—This building it is not necessary to illustrate. It is almost similar to the stamp house, except that stamps do not form part of its equipment, since the material coming to it is entirely turbid water, containing finely-divided material from various screening operations, which have been noted in their proper places. Instead of having four sets of classification apparatus, it has only three sets, with the same adjuncts of sand jigs, labyrinths, Rittinger spitzkasten, buddles and tables, arranged in the same way. The classification sets differ from those described in having one more box at the beginning of the set, and the buddles differ in being triple instead of double. The power for this building comes from an overshot wheel 13½ feet high at the end of the building, driven by excess water from the upper buildings.

ECONOMICAL RESULTS OF THE DRESSING.

It only remains to speak of the practical results that have been attained from the dressing of ores in this works. Since they were started careful detailed accounts are said to have been kept of the various dressing operations, and of the working of the various machines. These accounts show the amount fed to, and discharged from, each operation, with careful analyses of the products. Figures from these accounts will probably find publication from time to time in the pages of the *Zeitschrift für Berg-Hütten- und Salinen Wesen*, which is the Government organ, and in which, in addition to the careful paper of HERR KUTSCHER, the engineer of the works, various data as to experiments and changes in the works have already appeared. As continuous systematic, careful accounts have never been kept of the operations of ore dressing on so large a scale, if at all, except for experiments, the most valuable results may be expected from them. One very practical result will be the basis they will afford for careful and frequent comparative experiments, and the great addition they will make to the accurate figures concerning ore dressing. It does not seem a very wild prediction to anticipate as a not distant result of the accumulation of such figures the radical alteration of the whole method of treating sands and slimes in this establishment.

The only exact figures thus far published for these works are for five months in the year 1875. During that period 18,300 cubic meters of ore were treated, which were accounted for by the following products:

	Cubic meters.		Cubic meters.
Ore containing 71 per cent.....	13,000	Ore containing 1·8 per cent.....	330
" " 15 "	2,740	" " ·11 "	21
" " 8 "	1,450		
Total			17,541

This showed, therefore, for the five months, a total dressing loss of 759 cubic metres, or 4·14 per cent. of ore which passed off unaccounted for. It was probably lost in two ways—(1) Some of it went off still suspended in the water leaving the works. If we suppose 15 cubic meters of water leaving the works per minute, this would give about $\frac{8}{10}$ of a pound of material suspended in every cubic meter of water leaving the works for five months. Part of it, however, was (2) in the ore thrown away in hand-picking, and contained in the tailings from the jigging houses. The average of many analyses made show the following percentage of galena to be contained in the barren material sent to the dumping ground, and in the slimes going off suspended in the waste water or thrown away:

	Galena.
1. Dumped material from hand picking and jigging.....	0·84 per cent.
2. Tailings from buddles and tables.....	1·03 "
3. Slime suspended in waste water.....	0·875 "

To even partially recover that contained in the first class coming from hand-picking and jigging would necessitate further reduction by rolls or stamps for the respective classes, and further handling by jigs, buddles, tables, etc. It is very properly considered that the expense of recovering it would exceed its value. It seems probable that the figure for the second class of loss might be materially reduced by laying down more perfect apparatus than their present buddles and tables. The figure for the third class they expect to reduce by increasing the number of slime and clearing pits, and have probably done so already.

From these analyses they reckon the absolute dressing loss in galena during 5 months at 4,083 centners (204 tons), which they distribute as follows:

	Galena contained.
1. Dumped material from hand-picking and jigging.....	576 centners.
2. Tailings from buddles and tables.....	3,347 "
3. Slime suspended in waste water.....	160 "
	4,083 "

But they obtained 43,552 centners (2,122 tons) of the galena in the ore in a concentrated form. The dressing loss, therefore, referred to galena in the ore alone, was equal to 9·375 per cent., or, as before stated, 4·14 per cent., if referred to the total ore. They profess to be very well satisfied with this result, and may well be so, for their figures show close work. They propose, however, to better these figures, and the amount of galena contained in the tailings from their buddles and tables point clearly to a very necessary change of method and apparatus.

PETROLEUM NOTES.

COMPARATIVE SYNOPSIS OF REPORTS FOR JANUARY AND FEBRUARY, 1878 AND 1877.

42 GALLONS = 1 BARREL.		1878.		1877.	
		January, 31 days.	February, 28 days.	January. 31 days.	February, 28 days.
Stock at the Wells.....	Bbls.	144,942	162,410	154,175	151,389
Production for the month.....	"	1,203,296	1,094,856	842,800	783,412
Daily average production.....	"	38,816	39,102	27,190	27,979
Iron tank stock	"	3,410,400	3,713,554	2,449,953	2,709,247
Total stock in the region.....	"	3,555,342	3,875,964	2,604,128	2,860,636
Shipments out of the region	"	775,791	774,234	743,461	484,904
Number of producing wells.....		8,616	8,725	6,283	6,441
Number of drilling wells.....		334	326	457	463
Number drilling wells completed		274	226	281	241
Aggregate daily production of new wells in bbls.....		2,892	2,898	2,611	2,002
Exports from New York	Gals.	10,711,917	11,197,427	12,241,666	9,955,850
" " Boston	"	346,180	498,972	18,610	111,547
" " Philadelphia	"	2,582,644	5,313,300	2,861,826	5,045,287
" " Baltimore	"	1,398,782	3,130,718	1,245,991	2,489,344
" " Richmond	"	.....	.....	.....	.....
" " San Francisco.....	"	.....	.....	98,550	44,950
Total exports.....	Gals.	15,039,523	20,140,417	16,466,643	17,646,978

European Stocks.

	On Hand. Bbls.	Afloat. Bbls.	Unload'g Bbls.	February 15-22, 1878. On Hand. Bbls.	Afloat. Bbls.	Unload'g Bbls.
Hamburg.....	28,182	.....	4,500	Stetin	3,339	7,505	.. ..
Antwerp.....	96,582	56 909	23,000	Danzig	22,878	.....	.....
Rotterdam.....	27,712	8,992	.....	London.....	64,890	1,580	.....
Amsterdam	20,238	2,553	3,000				
Bremen.....227,711		64,092	81,500	Totals 491,532		141,631	112,000

Total stock on hand, afloat and unloading, for the eight principal ports in Europe, February 15-22, 1878, was 745,163 bbls.; at the same time in 1877, 464,981 bbls.; increase in 1878 over 1877, 280,182 bbls.—*Stowell's Petroleum Reporter, March* 16, 1878.

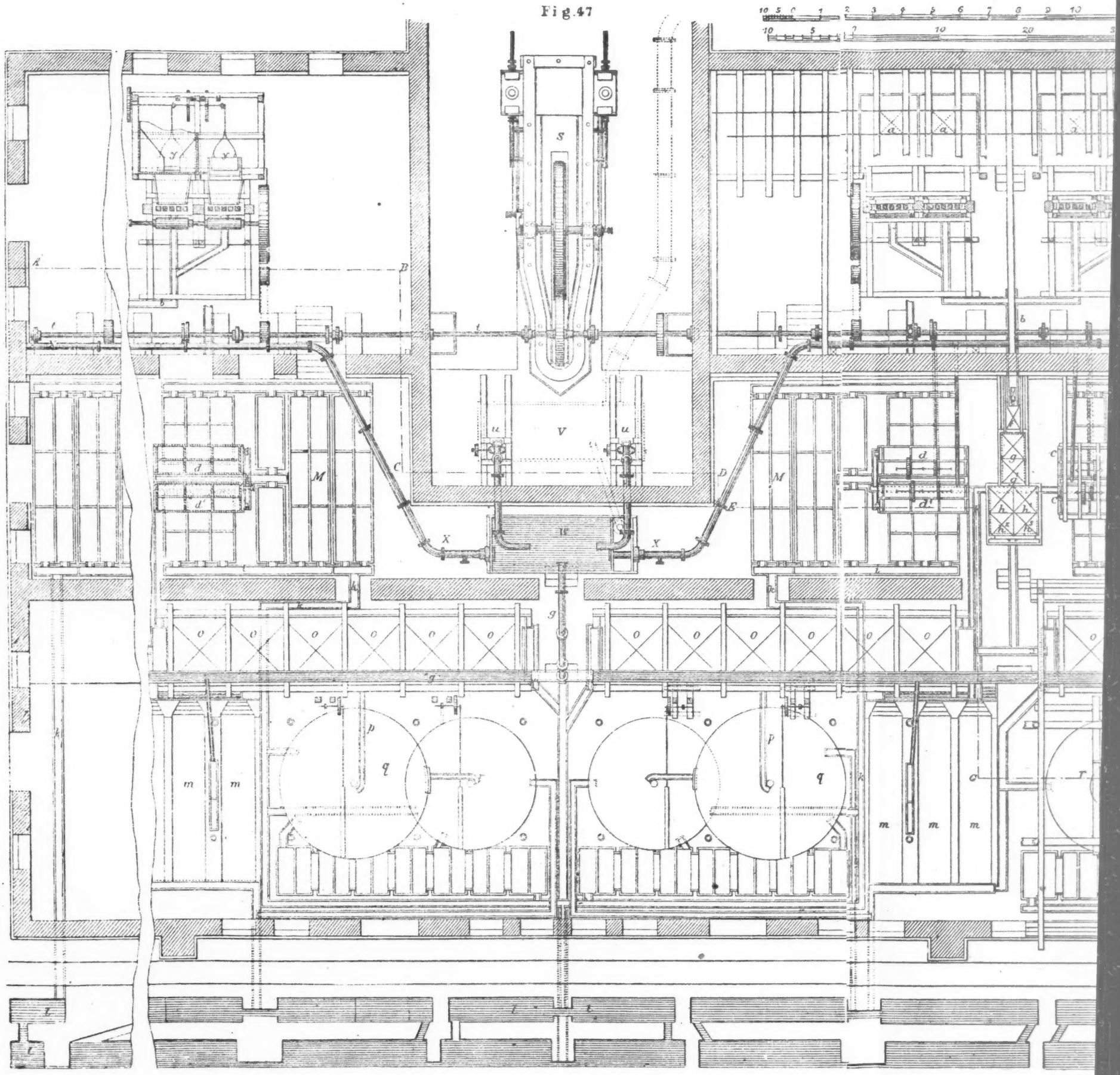
A PIPE LINE IN WESTERN VIRGINIA.—An oil lipe line is to be laid in the counties of Wood, Pleasants and Ritchie, West Virginia. A certificate of incorporation was issued on the 25th inst. The capital stock shall be $10,000, with the privilege of increasing the same to $100,000. The shares are held at $50 each. The charges for the transportation of petroleum through the line or lines of pipe or tubing shall not in any case exceed twenty cents for each barrel of forty gallons for the first five miles, and not more than four cents a mile for any distance greater than five miles.

THE PIPE-LINE BILL IN THE NEW YORK SENATE.—ALBANY, March 28.—The Senate had a long discussion again to-day on the bill authorizing the incorporation of pipe-line companies for the transportion of "petroleum gas, liquids, or any products or property," from the interior to the seaboad. A motion to "progress" the bill was lost, and it was ordered to a third reading, in the absence of a large portion of the senators, by 14 votes. An amendment was adopted, however, on motion of Mr. Hogan, exempting the City of New York from its provisions.

From the *Railroad Gazette* we take the following notes:

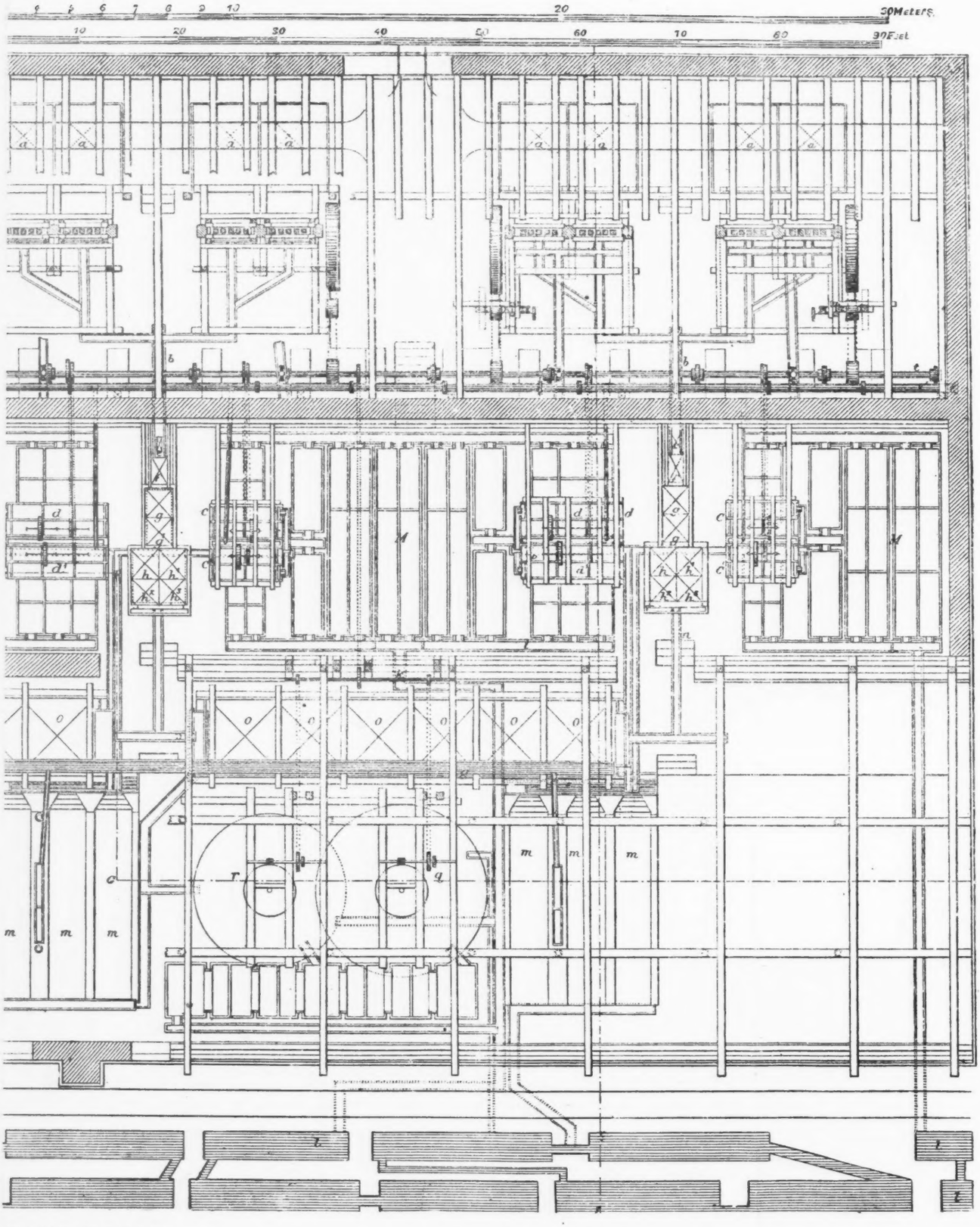
Laurel Fork & Sand Hill R. R.—This short road, which connects the oil wells about Volcano, W. Va., with the Baltimore & Ohio at Laurel Junction, is controlled by the Camden Consolidated Oil Company of Baltimore, a branch of the Standard Oil Company. The oil producers claim that the road has been discriminating heavily against those who do not sell their oil to the Camden Company, and they have secured a charter for a pipe line from Volcano to Petroleum Station on the Baltimore & Ohio R. R.

Fig. 47



PLAN OF THE STAMP HOUSE.

THE NEW ORE DRESSING WORKS AT CLAU



TAMP HOUSE.

RKS AT CLAUSTHAL.—No. VIII.

Olean, Bradford & Warren R. R.—A branch of this road is to be built at once from a point near State Line station, up Knapp's Creek to Duke Centre, N. Y. The distance is four miles.

Rochester & State Line.—Preparations are being made for a considerable business in petroleum over this road as soon as the pipe line from Bradford to Salamanca is completed. Large storage tanks are to be built on the company's land at Salamanca, and all necessary facilities for the business will be provided.

THE OIL BUSINESS IN PETROLIA, ONTARIO.—The Petrolia *Advertiser* of the 8th inst. says:

"We fancy that until more activity is manifested in the oil market very few will try new ventures in the development of new territory. Producers are, in the meantime, content to get what they can out of the wells already producing, without running any more risk in trying for more until the market is opened for what they are already producing. We believe the best thing for the 'Mutual' Oil Association to do is to take steps at once for the purpose of refining all the oil now in stock. It would be advantageous in more ways than one. In the first place it would require less tankage, and then it would be ready for market at the shortest notice; and it can also be done at a less cost here than in London. There are plenty of idle 'stills' in Petrolia which could be employed advantageously, and we believe the 'Home' Oil Works Company have sufficient capacity for refining all that is produced. The London refiners seem to be about giving up the business; and in any case Petrolia is the place for the manufacture of the raw product of its own territory."

The following statements, gleaned from the returns of the Inland Revenue Department, are just issued: For the year 1877 there were three licences issued for Hamilton District, 18 for London, 5 for Paris, 11 for Sarnia, 1 for Toronto and 2 for Montreal. In London, 98,558 gallons of tar and residuum not dutiable were used, and in Toronto 1,029 gallons of the same material. The following table gives the crude and distillate used, the total quantity refined, and the duty and inspection fees collected:

DIVISIONS.	Crude and Distilled. Gallons.	Refined made. Gallons.	Duty and Fees.
Ontario.			
Hamilton	1,290,551	691	$745.35
London	8,475,968	4,638,366	296,619.56
Paris	63,765	32,103	2,234.62
Sarnia	6,102,041	3,224,317	195,167.12
Toronto	11,772	11,002½	723.68
	15,944,087	7,905,497½	$489,487.33
Quebec.			
Montreal	20,550	8,274½	1,285.33
Total	15,964,647	7,913,754	$490,772.66

Elk River Oil Co.—We note the recent organization of this company to operate in West Virginia, with a capital stock of $100,000.

A Gas Well Struck.—The largest vein of gas ever tapped in the oil regions has been struck by a Kittanning Company. The well is only four miles from the pipe laid for the purpose of carrying gas to Sharpsburg, Pa.

Petroleum Resources of California.—The San Francisco *Journal of Commerce* of the 16th inst. says:

"Almost all the Southern country is full of petroleum—San Luis Obispo, Santa Clara, Santa Barbara, Ventura, Kern and Los Angeles containing numerous wells at present. The principal oil-bearing district, known as San Fernando, is 60 miles long by 8 miles wide, and could itself without difficulty supply the Pacific coast and China and Japan, were its resources properly developed. During the past two years there have been formed at least a dozen companies whose united capital on paper is at least ten millions of dollars. Few, however, have done anything. The Star Company is the principal one. It has five wells and a steam driven plant, and has supplied the market in 1877 with 128,000 gallons of refined kerosene, besides a large quantity of lubricating oils. The supply this year will be much larger, already equaling 42,000 gallons of kerosene. The production of the Southern country equals 100 barrels a day of crude, which is made into 50 barrels a day of refined petroleum and lubricating oils. Of this about 30 barrels a day of both kinds is received in this city, the rest being consumed South.

"Three years ago the production of crude petroleum in California did not exceed ten barrels a day; now the average production of the wells is about 200 barrels daily. Well No. 4, Pico Cañon, yielded within a trifle of 2,000 barrels of oil in January, worth $8,000. Its depth is 550 feet."

ALBANY, March 29.—The bill for the incorporation of the Pipe Line Companies passed the Senate to-day. It grants to pipe lines the same right of eminent domain which railroad companies possess under the General Railroad act. It has been reported that the Attorney-General is of the opinion that the Governor will not sign a Pipe Line bill which gives the right of eminent domain. Pipe line legislation is at present absorbing the attention of members from the western part of the State. A considerable lobby influence is at work. The railroads are arrayed against the measure.

MINING NEWS.

COLORADO.

Special Correspondence Engineering and Mining Journal.

THE PRICE OF POWDER IN COLORADO.—An enterprise is being inaugurated by J. D. Griswold, formerly of Buffalo, for the manufacture of powder in Colorado. It is claimed that black powder and high explosives can be supplied by home manufacture at one half the prices now ruling here. If this is true, the annual saving to the miners of Gilpin County alone would exceed $25,000. Black powder is now sold in counties possessing railway facilities at from $4 to $4.25 per can or keg of 25 pounds. Some time ago it was much higher. The price is kept up by a combination of the California and leading Eastern companies. Through this combination the Rocky Mountain region is called neutral ground, and is made to pay higher rates than the East or the Pacific slope—$3 per keg being the price in the latter, and from $1.75 to $2.15 in the country from the Missouri River to the Atlantic seaboard. The enterprise has excited much interest in Central and Georgetown, and a mill will undoubtedly be put in operation near Golden, at an early day.

DENVER, THE METALLURGICAL CENTRE OF THE WEST.—It is reported that the Omaha Smelting Company will establish extensive works at Denver this summer, and compete with the Boston and Colorado and other companies for the purchase and treatment of Colorado ores. The Omaha works have drawn their supplies mainly from Utah, although recently purchasing to some extent from the telluride mines of Boulder and the carbonate of lead deposits of Lake. The growing activity and production among Colorado mines gives ample scope, however, for additional smelting facilities. It is said that in view of these facts the great smelting firm of Vivian & Sons, of Swansea, Wales, will establish branch works in Colorado. If these new enterprises are carried out, there will be a lively competition in the ore market.

There has been considerable talk of the removal of the great smelting works at Black Hawk to Denver, and it is said the project will be carried out this summer.

THE COLORADO COMSTOCK.—A very good record has been made by the Comstock mine, which underlies several of the streets and buildings of Central City. This was discovered in October, 1876, by D. Jenkins. The surface dirt yielded $1,350 worth of gold, with but little expense, up to the time that E. D. Fritz bought the property. During the succeeding five months the main shaft was sunk to a depth of 130 feet and $30,500 came from the ore raised therefrom, with a profit of over $20,000. No pay was then found in other shafts. At this time (April, 1877), Fritz sold for $40,000 to William Einstein and S. W. Tyler, of St. Louis, who formed the Comstock Mining Company. About $5,000 was then expended in machinery, boiler, shaft house, etc., and work was begun on a more extensive scale. The vein pitches down the hill at an angle of 45 degrees. A chimney of quartz or pay-dirt, partly hard and partly soft, has extended from the surface downward, never leaving the course of the shaft but once, and then only for a short distance. This vein of quartz has usually been several feet thick (often from 5 to 8) and has varied in length horizontally from 15 to 60 feet. The yield of gold has been remarkably good. At a depth of 360 feet a level run toward Gregory Gulch has kept in a vein of varying thickness, and pay has lately been found in spots further up the hill. William A. Scott superintended the mine from April to July, and William Einstein from July to September. S. W. Tyler then took charge, and H. Robyn became business manager. In eight months, to January 1, 1878, the company had sunk the shaft to a depth of 400 ft., and had obtained $33,542.66 from the mine. During the fourteen months ending with January 1, 1878, the mine had produced $65,392.66, with a profit of about $38,000. In the last six months of the year the shaft had been sunk 270 ft., and $10,000 had been expended altogether in machinery, buildings and in improving the shaft. In January Messrs. Scott and Robyn became sole and equal owners of the property. Since then the shaft has reached a depth of 490 ft., and the "key rock," that had divided and impoverished the vein for some distance (as in another locality above), disappeared, leaving the customary rich ore body. On the 13th day of March, just before this "key rock" came to an end, Mr. Robyn sold his half interest to Julius Culpay, an Austrian gentleman interested in several Clear Creek mines. Mr. Scott continues to manage the Comstock. In January and February mining and hoisting could not be carried on half of the time, owing to the putting in pumps, a new boiler and improvements at a cost of $2,500; yet the shaft was deepened 70 ft., a level was driven west 80 ft. at a depth of 360 ft., and $3,902.90 was obtained from the ore milled.

The Comstock and Clipper veins approach each other diagonally from Gregory Gulch, and a shaft has been sunk at the point of crossing. They are covered by surveys 1,500 ft. long by 150 wide, and have the same owners. Besides several minor shafts and the hoisting works, pumps, etc., the improvements of the Comstock are a shaft 490 ft. deep, and 500 ft. of drifts extending therefrom, embraced in the 130 ft., 170 ft., 300 ft., 360 and 400 ft. levels. Six hundred feet northeast of the main shaft is another shaft, 96 ft. deep, that has yielded eight-ounce ore—an ounce of this gold is worth about $16, making $128 to the cord. Last week a "pocket" was struck by running a drift from this shaft, from which one-quarter of a cord of ore gave 7½ ounces of gold, or $120! Since December 1, a shaft has been sunk, size 4×11 ft., at the crossing of the Comstock and Clipper, and a good 18-inch crevice is visible at a depth of 64 ft. Several of the best months show the following record:

Month.	Tons of ore.	Gross product.	Expenses.	Profit.
June	47	$5,242.48	$2,185.82	$3,056.66
July	37	4,426.19	3,692.41	733.78
August	70	8,796.10	4,159.45	4,636.65
September	54	5,092.00	4,738.34	353.66
Total	208	$23,556.77	$14,776.02	$8,780.75

The average yield of these four months was $113.25, or over seven ounces per cord of ore, and each cord usually contains about eight tons. In December 38 cords were milled, returning $5,048.17, with a profit of $2,503.42, and an average of 7⅝ ounces of gold per cord. In the first week of February 12 cords of ore milled, at the rate of 8 ounces and 17 dwt. per cord. The ore body in the bottom of the shaft is unusually large and rich, the split in the vein having disappeared, and the mineral resumed the value of six months and one year ago. Seventeen men are employed at and in the mine at present. Not taking the cost of the machinery and permanent improvements into consideration (as they will answer for the year to come), and the first ten months of the St. Louis parties' operations show a profit of about 40 per cent. of the gross receipts, or of the purchase money of the property. As there are now three shafts in pay, instead of one, and expenses are much less than under the poor management of a part of last summer, the yield and profits should increase largely.

SAN JUAN.—Our correspondent, Mr. E. Steinbach, sends us from Del Norte the following:

Eureka District.—"Mountain Queen" is turning out a good deal of fine ore, and is being worked up in shape, and the amount of ore to be disposed of next year will exceed by 100 tons the amount of the last season.

Uncompahghns District—Poughkeepsie.—In the lower level the ore body has been struck and shows even better than in the upper, and there is now upward of 1,500 tons good ore in sight.

Accapulco.—The last 40 feet have not developed a great amount of ore, but the ore is now coming in rapidly, and the lode looking kindlier than ever.

Bonanza Tunnel, total distance 220 feet. The rock continues extremely hard. The new location to connect with that one now worked is considered as one of the greatest value, and will cut some of the most famous lodes in the country; total length of the whole tunnel to be 7,000 feet.

Boston, second level in 93 feet. Some stoping has been done on this level, and there is now upward of 2,500 tons on the dump and ore house. The ore is low grade Galena, copper averaging about 45 oz.

Animas District—Aspen.—There is upward of 80 tons of 150 to 200-dollar ore on the dumps, and the ore piles are increasing daily. The first team left to-day for the mines and snow is settling very fast.

A RICH STRIKE IN THE SANTA LA SARIA.—A letter from the Superintendent says: "The critical shot knocked up about a ton and a half of the finest gray copper I ever saw; vein 18 in. wide, all close together; soft rock; excellent gouge."

MONTANA.

The Helena *Independent*, of the 14th inst., contains the following, regarding the developments in the Snow Drift Gold Mines: "There has been taken out of these mines recently about twenty tons of ore, that will certainly yield $1,000 to the ton, and at least ten tons that will pay $1,500 per ton, at the lowest estimate. Taking the ore as it comes from the mine, without any sorting, it is predicted that the five-stamp mill, now running upon it, will turn out $100,000 in bullion in one month. There are many very rich lodes in the same district, some of them pretty well developed, and the ore from them has paid, in arastras, an average of about $20 per ton. In fact, the lowest grade ores that have ever been worked paid $12 per ton, and this without sorting."

NEVADA.

Grand Prize.—This company has purchased of the Overman Mining Co., on the Comstock, for use in its mine, a heavy Cornish pump, so as to handle a vast amount of water, which, it appears the mine has to contend with.

Palisade Coal Co.—The *Eureka Sentinel* says: "This company is very much encouraged by the recent developments in its mine. Messenger Ross brought up for our inspection a huge lump of the article, and, as far as we were able to judge, its quality is excellent. It certainly burns freely and gives out a large amount of heat. He informs us that it was struck in the tunnel at a depth of 175 feet from the surface, and the vein has been penetrated a distance of twelve feet since found. How much thicker it is can only be demonstrated by future work, but there is every evidence of a large and permanent deposit having been met with. The workmen in the tunnel have, since encountering the vein, penetrated the strata a distance of 25 feet, and are not yet through it.

"The ore in the Connolly mine at Eureka runs $260 per ton, and it is believed that it is one of the most promising mines in the district.

"The K. K. furnace reduces 45 tons per day, which yield eight tons of bullion, valued at $2,400."

The Richmond Company in Trouble Again.—Five confidential employés of the Richmond Mining Company, at Eureka, having learned, through their relations to the company's mines, that certain adjoining ground is valuable as a mineral deposit, have quietly located it in their own names. The company, of course, immediately demanded a transfer of the location to itself, but this the employés refused and resigned their positions. "This affair," says the Austin *Reveille*, "opens a new question in mining and the rights of location—one which has never before manifested itself in the history of mining in this State. Such a proposition as miners locating ground, of which they had acquired knowledge while underground for a mining company, would be considered ridiculous on the Comstock; but they go on the one-ledge theory there, and every ounce of quartz found in the workings of the mines is considered Comstock ledge. The locators of the extension of the Richmond are old and long-trusted employés of that company, having held responsible positions in connection therewith."

This company is now reducing 1,000 tons of ore per week, which gives a return of $90,000. The refinery turns out about $40,000 each week.

The Manhattan Silver Mine.—An extract from the Manhattan official letter of March 15 says: "During the past week the mill crushed 147 tons of ore, and shipped during the week thirty-four bars of bullion, valued at $32,378.34. At the Frost shaft stoping is being done principally in the 670 level. The ledge is being developed as fast as the west drift is run, and now shows good ore its entire length. The 770 west stope still carries a large ledge, and is being rapidly pushed to the ore chimney in the 434 level. Drifts are being run east on the North Star and Independence veins, with good results. In the Curtis shaft the 560 and 600 stopes continue to produce the usual quantity of good ore. As soon as the 675 level is connected with the air winze, a stope will be opened on this level. In the 517 level a drift has been started on the Panamint ledge, west of the shaft, to reach the chimney worked in 1874. Through the South American shaft [illegible] cut a large ledge which carries ore in places, [illegible] a drift has already

"The Manhattan shipped to-day sixteen bars of bullion, valued at $16,239.74."

The *Reveille* says that the prospects of the Manhattan Company's mines for an increased yield of ore for some time to come are now very much improved.

Sutro Tunnel.—This work was advanced on the 20th inst. 19,231 feet. The header is in regular Comstock vein matter, and being now well into the eastern portion of the great lode, the temperature has correspondingly increased, the drill holes in the face of the header showing a temperature of 112 degrees. At the present rate of progress it will take five or six months to run through to the west wall of the lode, during which time good ore developments are very liable to be made by the tunnel.

At every blast now fired in the Sutro tunnel, small pieces of rock and dirt are jarred down from the roof and sides of the 2,000 level drift of the Savage, and it is thought the header is not more than 300 feet distant from the workings of the mine.

The Sutro *Independent*, of the 16th inst., says: "In order to set at rest the many con-

flicting statements which appear in the newspapers, Mr. Sutro has authorized us to publish the following official statement: "A point at right angles with the incline of the Savage mine, on the level where the Sutro Tunnel will intersect it, is distant 20,370 feet from the tunnel entrance, and the tunnel had, on the 15th inst., reached a length of 19,177 feet. The distance to be yet run, therefore, is 1,193 feet. It is not safe to calculate on a progress of more than 200 feet per month hereafter, considering the difficulty of the ground, the heat and other obstacles. It will, therefore, require six months to finish the tunnel to the Comstock Lode, or until September 15 next. A point opposite the Combination Shaft was passed 504 feet east of the header more than two months ago, and a connection could have been made through the same Comstock Lode long since, were the differences between the mining companies and the Sutro Tunnel Company adjusted. The latter has made liberal concessions to bring about an understanding, but there is very little prospect that any will be arrived at—at least for some time to come."

NOTES.

THE FOUR SALT WORKS in the Hocking Valley, O., produce 37,700 bbls. annually.

AT AND ABOUT POMEROY, O., twenty-one of the twenty-six salt works are now in operation.

CINCINNATI received by barges last month not less than 2,530 tons iron and 39,675 bbls. salt

STILL ANOTHER COLLIERY EXPLOSION IN ENGLAND.—An explosion occurred on the 27th inst. in the Opedall Colliery, in North Staffordshire. Five corpses have already been recovered. Thirty persons are still in the pit, and it is feared they are all dead

FAILURE OF THE CALEDONIA COAL & RAILWAY CO.—BOSTON, March 23.—"The Caledonia Coal & Railway Company, which has large coal mines at Cape Breton is embarrassed. Liabilities reported at $250,000. Assets nominally in excess of these figures."

VIRGINIA IRON ORE FOR PENNSYLVANIA FURNACES.—The Dunbar Furnace Company and Lemont Furnace Company are making arrangements to get large and regular supplies of ore from Virginia. Both of these companies have an interest in the ore mines.

CHINA CLAY AND ARSENIC.—China clay creates rather less attention. Roswellyn, 21s. 6d., f. o. b.; Cornwall, in bulk or ex store, Runcorn, 31s. 6d.; ex store, Leith, 35s.; B. M., f. o. b., 30s.; ex store, Runcorn, 39s. Best white powdered arsenic, £10 10s. per ton.—*London Mining Journal.*

"PAY DIRT."—The dirt washed out of the shirts and jumpers worn by the workmen in the Bonanza mines averages in weight 50 lb. a day, and has been found to assay $259.10 a ton. Hereafter it will be collected and the precious metals extracted. The value of the product will be some $2,000 a year.

FAST TUNNEL DRIVING.—The boring machinery at Carn Bea is now driving at the rate of fully 30 fathoms a month, and preparations are being made for sinking with the machinery. Capt. Teague says, if they can sink as far as they can drive, £40 a ton for tin will be enough to make a profit.—*London Mining Journal.*

INTERESTING STATISTICS.—In New Jersey the average cost in public schools in cities, based upon the entire census, is $5.48 for each pupil. The lowest cost being in Perth Amboy ($3.45), and the highest in Atlantic City ($8.04.) The average cost based upon the average attendance is $14.11; the highest being in Plainfield (24.41) and the lowest in Millville ($7.60).

SPECIFIC HEAT OF VAPORS.—Eilhard Wiedemann has supplemented Regnault's and Winkelmann's investigations, of the specific heats of vapors and their changes with temperature, by some experiments of his own. The comparative results between corresponding temperature-limits are:

	Regnault.	Wiedemann.		Regnault.	Wiedemann.
Chloroform	·1567	·1573	Acetone	·4125	·3946
Bromide of Ethyl	·1896	·1841	Acetic Ether	·4008	·4190
Benzine	·3754	·3946	Ether	·4797	·4943

The differences range between one-third per cent. and five per cent.—*Pogg. Ann.*

SHIPMENTS OF NITRATE FROM SOUTH AMERICA.—During the month of January last the following shipments of nitrate were effected from the ports of Pisaqua, Mejillones and Iquique:

	Quintals.
For private account	139,201·24
For account of the State	106,645·38
Total	245,846·02
Total product	174,748·72

EXPORTATION OF MINERAL PHOSPHATES TO EGYPT.—The Boston *Journal of Commerce* says: "The Norwegian bark Bjarke lately cleared from Norfolk, Va., with a sample lot of several tons of phosphate, ordered by the Secretary of the Khedive of Egypt, to be used experimentally on the great cotton and cane fields of the Egyptian Government. The object is to test whether the phosphate can be substituted for Peruvian guano, which has heretofore been largely used in Egypt, but is now becoming too scarce, and consequently too expensive to be used with profit. Phosphate rock is now exported in large quantities to Europe, and the quantity is steadily increasing, but the exportation of the manufactured articles has only lately begun."

COAL IN PERU.—A bed of coal, of unknown extent, has been discovered a Chala Alta, near Oluzco, in the department of Liberted, Peru. The Government sent a scientific commission to examine the deposit, and has received a highly favorable report. The Chala Alta coal field will, it is estimated, suffice to supply the requirements of the whole of South America, and the quality and cheapness of the coal will enable it to drive the English coal from these markets. The average consumption of coal on the coast of Peru is estimated at 200,000 tons per annum, which, at the rate of 22 soles per ton, gives a total of 4,400,000 soles at present paid to England for fuel, and which Peru hopes to save by utilizing her newly-discovered sources of coal supply.

EXPORTS OF ALL KINDS OF COPPER FROM CHILI DURING THE LAST TWENTY YEARS, IN TONS FINE COPPER:

1858.	1859.	1860.	1861.	1862.	1863.	1864.
30,470	28,250	36,289	38,371	43,109	32,540	47,500
1865.	1866.	1867.	1868.	1869.	1870.	1871.
48,327	44,820	44,654	43,669	54,867	49,139	41,200
1872.	1873.	1874.	1875.	1876.	1877.*	
46,337	42,165	48,240	45,430	50,740	45,000	

* Partially estimated.

From the above figures, it will be observed that the average exports for the first ten years was 39,433 tons; for the last ten years, 46,678 tons, and for the whole twenty years, 43,055 tons.

THE SNOWDON (CANADA) IRON MINE.—The Toronto *Monetary Times* of the 22d inst. says: "Mr. Myles, of this city, is now the principal proprietor of the Snowdon Iron Mine, and is taking energetic steps to develop it. He has surveyed and will construct within three months a branch railway from the mine to strike the track of the Victoria Railroad near Kinmount. Works for smelting the ore will be erected at Port Hope, which town will give $10,000 bonus—one-half payable when $10,000 is expended on the spur line of railway, and the other when the train load of iron ore from the mine reaches Port Hope. The Midland Railway gives $5,000 by rebates on ore freights. Mr. Myles will endeavor to ship, during the season of 1878, at least the thirty thousand tons of ore for which he has contracted with an American firm for seven years. He is bound that all ore and iron taken from his share of the mine shall be shipped over the Port Hope harbor, which agrees that the tolls shall not exceed ten cents per gross ton during that period."

VELOCITY OF SOUND AND SPECIFIC HEATS OF AIR.—In order to determine the ratio of the specific heats of air at constant pressure and constant volume—a value so important for the doctrine of heat—M. Kayser has, according to *Nature*, recently made fresh experiments on the velocity of sound in tubes. He adopted Kundt's method. In tubes of different diameters, air waves were produced by means of a transversely vibrating rod, and the length of these was measured by the dust figures remaining on the tube. Five tubes of different width were used, and three different steel rods. The results of the inquiry are these: 1. The velocity of sound in tubes depends on their diameter and on the pitch of the tones, and the retardation of the sound is inversely proportional to the diameter of the tubes, and the square root of the number of vibrations. 2. The velocity of sound in unconfined space is, accordingly, at any rate greater than in tubes. These experiments show it to be greater than 331·646m. 3. The velocity of sound in free space can be calculated from that in tubes when two tubes of different width are used. From these experiments the value obtained for it was 332·5m. 4. From this the ratio of the specific heat of air at constant volume and constant pressure is inferred to be = 1·4106.—*Engineer.*

HOW VIRGINIA CITY IS SLIDING DOWN.—The *Enterprise* says: "Our town is very quietly and very slowly moving to the eastward down the face of the mountain. This is owing to the settling of the ground over the Bonanza mines. As all the town is going together it is not much noticed on the surface, where no cracks are seen. The water and gas companies are better acquainted with the movements taking place in the ground forming the site of the town than most others, as the instability of the earth tells upon their pipes. On B and C streets, north of Union, the ground is moving both north and east. A water main, running north and south, uncovered yesterday at the corner of B street and Sutton avenue, was found to be telescoped to the distance of over a foot, and besides had in it a great kink which made it necessary to take out a piece nearly two feet in length. About the Consolidated Virginia pan mill the pipes are crowding in from both east and west; at least, owing to the settling of the ground in that neighborhood, there appears to be two movements. Although there are as yet no cracks in the central part of the town, there is a large one to the westward. It begins at Cedar Ravine, runs south to near the large water-tank of the Ophir, on the hill west of town, then turns east for a considerable distance, when it takes its course southward west of Stewart street, and finally joins the old crevice below the Gould and Curry croppings. Toward the north this crevice is about eight inches in width, and the ground on the east side of it is about three feet lower than on the west side. Captain Overtown, of the Water Company, whose opportunities for observing these movements are unsurpassed, says that as the ground settles over the bonanzas on the slope of the mountain, where it is not much disturbed, it gradually moves down. He says the International Hotel has moved east about five inches since it was built. If such is the case, all the buildings in that part of the town, with the ground on which they stand, must have moved the same distance, as no cracks are to be seen in the earth. As we are now traveling, however, it will be a long time before we reach the Sugar Loaf."

CENTRAL RAILROAD OF JERSEY (ANNUAL REPORT).—A special dispatch to the New York *Tribune*, dated Trenton, March 27, says the Central Railroad Company of New Jersey, and the receiver of the same, have filed in the office of the Comptroller of the Treasury, the following report of the affairs of the company, on February 4, 1878, and of the operations of their road from January 1 to December 31, 1877:

Capital Stock		$20,600,000.00
Funded debt		24,700,000.00
Other indebtedness		6,331,115.77
Railroad, main stem, Newark Branch and Perth Amboy Branch	$13,768,242.64	
Jersey City station	1,315,805.50	
Port Johnson coal station	873,297.09	
Elizabethport station	450,146.10	
Station houses, shops, etc	824,850.42	
		$17,232,341.75
Equipment of road		2,851,370.00
RECEIPTS.		
Passengers		$1,409,850.14
Merchandise		1,008,758.30
Coal		1,172,347.61
Mail, express, rents, etc		129,239.23
Total receipts		$3,720,195.28
EXPENSES.		
Running expenses	$941,623.00	
Fuel consumed	153,975.59	
Repairs of road, docks, etc	438,659.85	
Repairs of equipment	265,702.99	
Ferry expenses	137,623.46	
Miscellaneous expenses	233,453.02	
		2,171,037.91
Net earnings		$1,549,157.37

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others in terested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the nature and commercial value of minerals, and of samples sent.

Assays determining the actual composition and value of ores will be made at the following rates. All assays are made with the utmost care by the most experienced and competent assayers:

Assay for Gold	$2 00	Assay for Copper	$2 00	Assay for Zinc	$3 00
" Silver	1 50	" Lead	1 50	Zinc Analyses	5 00
" Gold & silv'r	2 00				

The amount should invariably accompany the order, and expressage or postage must always be prepaid.

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ENGINEERING AND MINING JOURNAL, 27 Park Place, New York. (P. O. Box 4404.)

Western Office, ENG. AND MINING JOURNAL, Denver, Colorado.

ANSWERS.

ASSAYS.

New York Office:

CXXIII. L. H.—Sample marked "801" contains gold, none; silver, 15·6 oz. per ton (2,000 lb.)

CXXIV. L. H.—Sample marked "604" contains gold, none; silver, 1·86 oz. per ton.

CXXV. L. H.—Sample marked "1,211" contains gold, none; silver, 6·25 oz. per ton.

CXXVI. L. H.—Sample marked "1,402" contains neither gold nor silver.

CXXVII. Mr. STONE, New York.—Specimen quartz contains gold, 1·18 oz.; silver, 0·11 oz. per ton.

STATISTICS OF COAL PRODUCTION.

This is the only Report Published that gives full and accurate returns of the production of our Anthracite mines.

Comparative statement for the week ending March 23, and years from Jan. 1:

TONS OF 2,240 LB.	1878.		1877.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co..	18,070	525,622	36,281	425,648
D. L. & W. RR. Co.	23,613	411,673	37,165	421,899
Penn. Coal Co.....	13,055	101,343	21,378	192,071
L. V. RR. Co.....	.....	184,338	10,489	202,548
P. & N. Y. RR. Co..	321	5,447	1,084	10,128
C. RR. of N. J.....	28,446	163,419	12,190	249,884
	83,505	1,391,842	118,587	1,502,178
Lehigh Region.				
L. V. RR. Co.....	31,883	417,557	46,538	503,784
C. RR. of N. J.....	13,205	167,602	22,418	240,597
D. H. & W. B. RR..	354	5,781	91	4,359
	45,442	590,940	69,047	748,740
Schuylkill Region.				
P. & R. RR. Co	499	513,034	103,585	854,360
Shamokin & Lykens Val.....	3,683	84,462	6,032	79,402
	4,182	597,496	109,617	933,762
Sullivan Region.				
Sul. & Erie RR. Co.	553	7,471	197	2,799
Total.....	133,682	2,587,749	297,448	3,187,479
Increase.....	.....	.....	.....	.....
Decrease	163,766	599,730	.....	.....

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent. of the whole production.

Receipts and shipments of coal at Chicago Ill., for the week ending March 23, and year from Jan. 1.

	Week. Tons.	Year. Tons.
Receipts.....	15,560	214,098
Shipments.....	2,403	45,436
Perth Amboy business:		Tons.
Received for the week.....		4,363
Shipped for the week.....		6,753
On hand March 16		88,293

The Exports of Coal from Baltimore for the week ending March 22 were 615 tons, and since January 1, 11,510 tons, as against 6,323 tons for the corresponding time in 1876.

Belvidere Delaware Railroad Report for week ending March 23:

	Week.	Year. 1878.	Year. 1877.
Coal for shipment at Coal Port (Trenton).....	.....	170	491
Coal for shipment at South Amboy	4,510	116,617	117,457
Coal for distribution.....	2,495	36,198	37,140
Coal for Company's use.....	1,794	19,561	16,580

Coal Creek Mines, Colorado.—Shipments for week ending March 9, 1,658 tons.

Receipts of Coal at Boston, for the week ending March 22 and years from Jan. 1:

TONS OF 2,240 LB.	1878.		1877.	
	Week.	Year.	Week.	Year.
From				
Alexandria and Georgetown.....	.....	1,749	.....	4,162
Philadelphia.....	4,928	64,440	4,872	38,310
Baltimore.....	.....	13,778	966	16,478
Other places.....	3,160	47,465	1,970	33,540
Great Britain	100	10,364	.....	1,806
Nova Scotia.....	150	471	.....	199
Total.....	8,338	138,267	7,808	94,495

The increase of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 23,096 tons as compared with the corresponding period in 1877.

The Production of Bituminous Coal for the week ending March 23, was as follows:

Tons of 2,000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
Cumberland Region, Md.		
Tons of 2,240 lb.....	23,215	151,516
Barclay Region, Pa.		
Barclay R. R., tons of 2,240 lbs.....	4,395	70,292
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.....	† ..	27,843
*East Broad Top	1,435	16,868
Clearfield Region, Pa.		
*Snow Shoe.....	389	7,927
*Tyrone and Clearfield.....	23,586	237,570
Allegheny Region, Pa.		
*Pennsylvania R. R	3,860	41,608
Pittsburgh Region, Pa.		
*West Penn R. R.....	3,689	26,483
*Southwest Penn. R. R.....	443	9,757
*Penn & Westmoreland gas coal, Pa. R. R.....	14,610	156,586
*Pennsylvania R. R.....	5,322	84,718

*For the week ending March 21.

†This report was not received this week.

The Production of Coke for the week ending March 21:

Tons of 2,000 lbs.	Week.	Year.
West Penn R. R.....	1,277	13,662
Southwest Penn. R. R.....	16,647	125,765
Penn. & Westmoreland Region, Pa. R. R.	1,135	13,353
Pittsburg, Penn. R. R.....	1,522	17,496
Total.....	20,581	210,176

COAL TRADE REVIEW.

NEW YORK, Friday Evening, March 29, 1878.

Anthracite.

The circular advance in prices noted in our last had the effect of creating a better demand for coal, and actually advanced the selling price, although not to anything like the schedule rates. A great deal of coal has been bought for this month's delivery, but the demand has fallen off considerably since the auction sale on Wednesday, and the indications are that an attempt to enforce the proposed advance will result in producing as quiet a market as ruled previous to its announcement.

The Delaware, Lackawanna & Western Railroad Company sold at auction, on Wednesday, the following quantities of coal, and received the accompanying average prices, comparison being made with those of the previous sale:

Tons.		Average prices. March 27.	Average prices. Feb. 27.
5,000	Steamer.....	$3.25	3.11½
5,000	Broken.....	3.22	3.07½
5,000	Egg.....	3.40	3.15½
20,000	Stove.....	3.69	3.55
5,000	Chestnut.....	3.18	3.00
40,000		$3.47½	3.23

That this sale was "bolstered" was very evident, although all purchases may have been *bona-fide*, and the "bolstering" may have been done by overloaded dealers.

As we mentioned in our last, if the companies would indicate their confidence in prices being maintained throughout the year by guaranteeing them, a much more liberal business might be done, for none hesitate in buying at bottom prices, while they do object to purchasing with the chances of a decline greatly in their favor.

The production of anthracite coal last week was 133,682 tons, as against 108,418 tons the previous week, and 297,448 tons the corresponding week of 1877. The total shipments from January 1 to March 23 were 2,587,749 tons, as compared with 3,187,479 tons during the like period of last year, showing a decrease this year of 599,730 tons this year.

Bituminous.

The labor question is about settled in the Cumberland region. There is no business worthy of note doing in bituminous coal, nor will there be before the freights and tolls for the season are announced, if even then. The announcements of these rates will take place not later than April 8.

The Philadelphia & Reading Railroad Co., under dates of March 25 and 26, has issued the following circulars, taking effect April 1:

SCHUYLKILL CANAL FREIGHTS.

STATIONS.	FROM. Schuylkill Haven.	FROM. Port Clinton.
To Orwigsburg Landing.....	.30	.25
" Hamburg.....	.30	.25
" Mohrsville.....	.33	.28
" Althouse's.....	.33	.28
" Reading.....	.33	.28
" Birdsboro.....	.35	.30
" Monocacy.....	.35	.30
" Port Union.....	.38	.33
" Pottstown.....	.38	.33
" Lawrenceville.....	.38	.33
" Royer's Ford.....	.40	.35
" Phœnixville.....	.43	.38
" Port Providence.....	.45	.40
" Pawling's Dam.....	.47	.42
" Valley Forge.....	.47	.42
" Port Kennedy.....	.47	.42
" Norristown.....	.48	.43
" Bridgeport.....	.48	.43
" Plymouth Dam.....	.48	.43
" Conshohocken.....	.48	.43
" Spring Mill.....	.48	.43
" Manayunk.....	.50	.45
" Philadelphia	.50	.45
" Bridesburg.....	.52	.47
" Beverly, N. J.....	.55	.50
" Florence, N. J	.55	.50
" Bordentown, N. J.....	.55	.50
" Trenton, N. J.....	.58	.53
" New York.....	.80	.75
" Cooper's Creek, N. J..	.52	.47
" S. Morton & Son.....	.52	.47
Up Ridley Creek to its mouth.....	.52	.47
To Chester, to all points below railroad.	.52	.47
" Chester Creek, Hospital.....	.55	.50
" " " Crozer's.....	.55	.50
" Wilmington, Del.....	.53	.48
" Brandywine.....	.55	.50
" Newport, Del.....	.55	.50
" New Castle, Del.....	.55	.50
" Delaware City.....	.57	.52

The above rates are exclusive of the cost of loading, trimming and unloading.

SCHUYLKILL CANAL TOLLS.

STATIONS.	FROM Schuylkill Haven.	FROM Port Clinton.
To Orwigsburg Landing.....	.50	.45
" Hamburg.....	.50	.45
" Mohrsville.....	.55	.50
" Althouse's.....	.60	.55
" Reading.....	.65	.60
" Birdsboro.....	.67	.62
" Monocacy.....	.67	.62
" Port Union.....	.68	.63
" Pottstown.....	.70	.65
" Lawrenceville.....	.70	.65
" Royer's Ford.....	.70	.65
" Phœnixville	.75	.70
" Port Providence.....	.82	.77
" Pawling's Dam.....	.83	.78
" Valley Forge.....	.84	.79
" Port Kennedy.....	.85	.80
" Norristown.....	.86	.81
" Bridgeport.....	.86	.81
" Plymouth Dam.....	.88	.83
" Conshohocken	.90	.85
" Spring Mill.....	.90	.85
" Manayunk.....	.95	.90
" Philadelphia.....	1.00	.95
" Bridesburg.....	1.05	1.00
" Beverly, N. J.	1.10	1.05
" Florence, N. J.....	1.10	1.05
" Bordentown, N. J..	1.10	1.05
" Trenton, N. J.....	1.23	1.18
" New York.....	1.60	1.55
" Cooper's Creek, N. J	1.05	1.00
" S. Morton & Son.....	1.05	1.00
Up Ridley Creek to near its mouth.....	1.05	1.00
To Chester, to all points below railroad.	1.05	1.00
" Chester Creek, Hospital.....	1.05	1.00
" " " Crozer's.....	1.05	1.00
" Wilmington, Del.....	1.08	1.03
" Brandywine.....	1.10	1.05
" Newport, Del.....	1.10	1.05
" New Castle, Del.....	1.10	1.05
" Delaware City.....	1.15	1.10

A deduction of 15 per cent. will be made from the above rates upon all anthracite coal consigned for actual consumption at iron works upon the line of the Schuylkill Canal.

The above rates are for Schuylkill Canal tolls, and include the tolls on the Delaware & Raritan Canal, the towing between Fairmount and Bordentown, between New Brunswick and New York and down Delaware River towing to points named. No deduction will be made from these rates to free boats, nor will any premium be allowed for prompt unloading.

The charge will be per ton of 2,240 lb. No charge less than forty cents per ton will be made for any distance.

FREIGHTS AND TOLL COAL TARIFF ON MAIN LINE.

STATIONS.	FROM Pine Grove.	FROM Tamaqua.	FROM Schuyl. Haven.
To Ringgold.....	.....	$0.50	.....
" Landingville..	.....	.....	$0.50
" Auburn.....	.....	.....	54
" Port Clinton.....	$0.91	86	71
" Hamburg.....	1.04	99	84
" Shoemakersville.....	1.09	1.04	89
" Mohrsville.....	1.11	1.06	91
" Leesport.....	1.13	1.08	93
" Tuckerton.....	1.16	1.11	96
" Reading.....	1.21	1.16	1.01
" Exeter.....	1.27	1.22	1.07
" Birdsboro.....	1.30	1.25	1.10
" Monocacy.....	1.32	1.27	1.12
" Douglassville.....	1.35	1.30	1.15
" Pottstown.....	1.39	1.34	1.19
" Limerick.....	1.45	1.40	1.25
" Aramingo.....	1.47	1.42	1.27
" Royer's Ford.....	1.48	1.43	1.28
" Phœnixville.....	1.52	1.47	1.32
" Perkiomen Junction.....	1.54	1.49	1.34
" Valley Forge.....	1.56	1.51	1.36
" Port Kennedy.....	1.58	1.53	1.38
" Port Kennedy Railroad....	1.64	1.59	1.44
" Bridgeport.....	1.62	1.57	1.42
" Rambo's.....	1.63	1.58	1.43
" Swede Furnace.....	1.64	1.59	1.44
" West Conshohocken.....	1.66	1.61	1.46
" Egbert's.....	1.69	1.64	1.49
" Mill Creek.....	1.70	1.65	1.50
" West Manayunk.....	1.75	1.70	1.55
" West Falls.....			
" Nicetown.....			
" Belmont.....			
" Philadelphia.....	1.80	1.75	1.60
" Richmond.....			

CIRCULAR NO. 5.

PHILADELPHIA, March 26, 1878.

Until further notice, and at the option of the shipper, the freight and tolls upon anthracite coal by canal from Schuylkill Haven to New York Harbor, to points upon the Hudson River, or to points upon Long Island Sound, will be one-half of the price at which said coal is sold alongside at the point of delivery, exclusive of the charge of towing from New York city, provided the net rate of freight and tolls, exclusive of towing from New York city as aforesaid, shall not be less than $2.30 per ton on stove coal, $2.20 per ton on egg coal, and $2.15 per ton on all other sizes: and season contracts for lump, steamer and broken coal for manufacturers and consumers consigned to above points for delivery, *at above rates*, through the season of 1878, may be filed at any time prior to April 27, inclusive, the company reserving the right, upon the filing of any such contract, to decide whether the vendee is or is not a manufacturer or consumer within the meaning of this circular. It being provided that if the coal is sent in private or leased boats, no higher rate of freight will be taken into account than then current in company's line boats; and provided further, that the above drawbacks will only be paid upon strict compliance in all details with the rules and regulations pertaining thereto, to be issued by the Secretary of the company.

CIRCULAR NO. 6.

PHILADELPHIA, March 26, 1878.

The drawbacks announced by Circular No. 4, 1878, will be discontinued on and after the 30th inst.

On and after the first of April, and until further notice, such drawbacks will be paid upon all anthracite coal shipped from Port Richmond and consigned to points beyond the Capes of the Delaware, and upon or through the Delaware and Raritan Canal, as will reduce the freight and tolls from Schuylkill Haven to forty per cent. of the net price at which the coal is sold f. o. b. at Port Richmond; provided the net rates shall not be less than $1.35 for stove coal; $1.25 for egg coal and $1.20 for all other sizes.

Season contracts for lump, steamer and broken coal for manufacturers and consumers, consigned as above, for delivery, *at above rates*, through the season of 1878, may be filed at the office of the company at any time prior to April 27, inclusive; the company reserving the right, upon the filing of any such contract, to determine whether the vendee is or is not a manufacturer or consumer within the meaning of this circular.

The above drawbacks will only be paid upon strict compliance in all details with the rules and regulations pertaining thereto, to be issued by the Secretary of the company.

New York.

Wholesale Prices of Anthracite Coal for April Delivery f. o. b. at Tide Water Shipping Ports, per ton of 2,240 lbs.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
WYOMING COAL.						
Lackawana, at Weehawken	$3 50	$3 50	$3 50	$3 60	$3 90	$3 50
*Pittston, at Newburg	3 35	3 35	3 35	3 45	3 75	3 10
Wilkesbarre, at Port Johnson	3 50	3 50	3 50	3 60	3 90	3 25
Lehigh Valley Coal Co., at Amboy	.....	.....	3 50	3 60	3 90	3 25
Kingston at Hobok'n	3 50	3 50	3 75	3 60	3 90	.....
Plymouth R. A., at Port Johnston	.....	.....	3 50	3 70	4 00	3 35
LEHIGH COAL.						
Old Company's, at Port Johnston	4 00	.....	3 75	3 75	3 90	3 25
Honey Brook Lehigh, at Port Johnston	3 75	.....	3 75	3 75	3 90	3 25
Lehigh Valley Coal Co., at P. Amboy	4 00	.....	3 75	3 75	3 90	3 25
Mount Pleasant, at Hoboken	4 00	.....	3 75	3 75	3 90	3 25
Hazelton, at Hoboken	4 00	.....	3 75	3 75	3 90	3 25
Cross Creek, at Port Johnston	4 00	.....	3 75	3 75	3 90	3 25
Sugar Loaf at Perth Amboy	4 00	.....	3 75	3 75	3 90	3 25
SCHUYLKILL COAL *at Pt Johnston, Phila.*						
Hard White Ash	3 25	3 25	3 25	3 35	3 55	3 00
Free-burning W. Ash	.....	.....	3 15	3 25	3 55	3 00
Schuylkill Red Ash	.....	.....	.....	3 50	3 60	3 00
Lorberry	.....	.....	3 60	3 60	3 60	.....
Lykens Valley Vein	.....	.....	3 60	3 75	3 75	.....

* Fifty cents per ton additional for delivery in New York.

Wholesale Prices of Bituminous Coal.

DOMESTIC GAS COALS.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Pennsylvania—		
At Greenwich, Philadelphia	$4 70	$5 50
At S. Amboy	5 00	5 50
Kanawha at Richmond	4 10	5 40
Red Bank Cannel, Pa., at Philadelphia	8 00	8 50
Youghiogheny, Waverly Co., at Balt	4 50	5 65
Despard, West Va	4 50	6 00
Murphy Run, West Va., at Baltimore	4 50	5 85
Fairmount, West Va., " "	4 40	5 70
Newburg Orrel. Md. " "	4 50	6 00
Cannelton Cannel, West Va	....	10 00
" Splint " at Richmond	6 00	7 00
" Gas Coal at Richmond	4 00	5 65
Peytona Cannel, W. Va., at Richmond	....	10 00

MANUFACTURING AND STEAM COALS.

Cumberland at Georgetown and Alexandria	2 85@3 10	4 35@4 50
Cumberland, at Baltimore	3 10@2 25	4 35@4 50
Cl'rfi'd "Eureka" and "Franklin."		
At mines	0 75	....
At Baltimore	3 25	4 50
At Philadelphia	3 25	4 50

FOREIGN GAS COALS.

	Sterling.	Am. cur'ncy.
Newcastle, at Newcastle-on Tyne	8s.6d.@10s.6d.	$5 50@ $6 00
Liv. House Orrel, at Liv.	25s.	13 00
Ince Hall Cannell "	35s.6d.	18 00
" Gas Cannel "	25s.6d.	10 00@ 10 50
Scotch Gas Cannel, at Glasgow, nominal	25s.	7 50
	Gold.	
Bl'k House, at Cow Bay, N.S.	$1 75	$4 50
Caledonia, at Pt. Caledonia	1 50	4 25
Glace Bay at Glace Bay	1 60	4 25
Lingan, at Lingan Bay	1 75	....
Intern'l Mines, at Sydney	1 75	4 50
Pictou, Vale Mines, at Pictou	2 00	4 70

Retail Prices.

Per ton of 2,000 lb.

Anthracite.

	G. & Egg.	Stove	Chest.
Pittston coal delivered	$5 00	$5	$5 00
Lack. coal, delivered below 59th St.	4 50	4 50	4 50
Wilkes-Barre, delivered	4 50	4 75	4 50
Lehigh and Locust Mount. del'd	5 00	5 00	4 75

Bituminous.

Liv. House Orrel	$18 00	American Orrel	$11 00
Liv. House Cannel	18 00	Red Bank Cannel	7 00
Am. "	11 00	Cumberland	9 00
Ca'n'lt'n Bl'k, or splint	10 00		

Baltimore. March 25, 1878.

Specially reported.

Wholesale Prices per ton of 2,240 lb.

In cars at Depot N. C. R. R.

HARD WHITE ASH, FREE-BURNING WHITE ASH, SHAMOKIN, ETC.

Lump and Steamboat	$4 15	Stove	$4 50
Broken	4 20	Chestnut	4 00
Egg	4 30		

LYKENS VALLEY RED ASH.

Broken, Egg and Stove	$4 55	Chestnut	$4 15

From yard or wharf to dealers, 75c. per ton additional for all kinds and sizes.

Boston. March 22, 1878.

Freights from Philadelphia are a trifle firmer, quoting $1.10@$1.20. From New York we quote 85c. and from Philadelphia $1.25@$1.35. Freights from Newcastle are also a little better, quoting 6s.@6s. 9d. The market is very dull, spite of the decision of the combination to curtail the production for April to 1,125,000 tons, against 1,712,653 tons last year.

We quote Boston wholesale prices as follows:

Anthracite, broken	$4.15	Caledonia	$4.50
" egg	4.25	Newcastle	4.25
" stove	4.75	Cannel, English	18.00
Franklin	5.75	" Library	15.00
Cumberland	4.50	" Buckeye	11.00
Clearfield	4.50	Penn	6.25
Westmoreland	6.25	Youghiogheny	6.25

[*Commercial Bulletin.*

Cincinnati, O. March 26, 1878.

[Specially reported by the Consolidated Coal & Mining Co.]

Per bushel of 72 lbs.

	Retail delivered.	Wholesale afloat.
Youghioghney	11c.	7½c.
Camden	9c.	5½c.
Cannel	17@18c.	13c.

Anthracite, delivered, $7@$8 per ton of 2,000 lbs.

Chicago, Ill. March 26, 1878.

[Specially reported by Messrs. RENO & LITTLE.]

Retail prices of coal delivered per ton of 2,000 lb.

Lakawanna Stove	$6 75	Erie and Brier Hill	$5 50
" Chestnut	6 75	Wilm'gton & Ill.	$3 50@4 00
" Grate	6 75	Blossburg	6 50
" Egg	6 50	Piedmont	7 50

Hamilton, Ont. March 26, 1878.

[Specially reported by H. BARNARD.]

Retail prices delivered per ton of 2,000 lb.

Scr. or Wilkes-B. Grate	$5 00	Lehigh Lump	$6 00
" " Egg	5 00	Brier Hill	5 50
" " Stove	5 25	Massillon	4 50
" " Nut	5 25	Smithing	5 50

Louisville, Ky. March 26, 1878.

[Specially reported by Messrs. BYRNES & SPEED.]

Wholesale per bushel of 72 lb.

Pittsburg	8c.	Raymond City	7½c.
Ashland (Ky.)	7	Kentucky, on cars	8

Retail.

Pittsburg	$3 00	Anthracite, per ton	$7 50
Raymond City	2 75	City Made Coke, per bsh	7c.
Ashland (Ky.)	2 50	Soft Coke, per bushel	7c.
Pittsburg nut	2 50		

Philadelphia, Pa., March 28, 1878.

[Specially reported.]

The trade continues depressed. The dealers are well supplied, and the need of coal by the furnaces is the only inducement to start the collieries for part of April.

The tolls for April, and for season contracts on lump, steamer and broken sizes, have been announced by the Reading. The principal feature of the current tolls is a *pro-rata* rate for all sales east of New Brunswick, 62½ per cent. higher than last year (40 per cent. instead of 33⅓ per cent.), with a minimum rate for each size, which is less than the rate of tolls corresponding to the prices on board of the company for April, as per circular, so that the only way to get the benefit of the lowest rates of tolls is to cut considerably under the prices published by the company.

The great feature of the rates for season contracts is that the minimum is 30c. per ton higher than last season, and the price of the coal on board corresponding to that minimum is also 30c. above the price of last season. In other words, the whole of the advance is in tolls, and the operator, who stops part of the time to enable the company to obtain a better price for coal and do as much business from their own mines as they did last year, and who has to pay higher wages and higher tolls, receives no more for his coal at the mines when contracted for the season. Everybody was prepared for higher charges for transportation, and no doubts were entertained about the company taking a big slice of the advance in price, but no one expected that they would take it all. Perhaps it is best that it should be so. Some people have had doubts about the intention of the company to crush all individual enterprise, and it is getting well defined and clear, even for the most credulous.

There is a slight improvement in the inquiries for shipments, and more vessels loading. Rates beyond the Capes are uniform now at $1 to Boston, Portland, etc. Nothing doing South.

San Francisco, Cal.

March 21, 1878.

Imports from January 1 to March 1:

	Tons.		Tons.
Anthracite	1,849	Vancouver Island	12,718
Australian	8,145	Seattle	6,634
Coos Bay	5,334	English	13,836
Cumberland	152	Mt. Diablo, 1 month	7,973
Bellingham Bay	1,700		

We note the following arrivals during the week: From Sydney, the bark Parknook with 1,200 tons for the rolling mills: from Nanaimo, 1,600 tons per Don Nicolas; from Coos Bay, 650 tons, per Empire, etc. The ships Seminole and Twilight, from New York, each brought small invoices. The general market is exceedingly dull and languid, being overloaded with supplies of nearly all descriptions. Quotations for the most part are entirely nominal. The Oakworth, from Liverpool, had 300 tons of coke. The Arcata, from Coos Bay, brought 300 tons. S. L. Jones & Co. sold at auction March 19 a cargo of West Hartly screened from yard; terms, thirty days, payable in silver; 175 tons sold in lots at $9; 50 tons at $8 50; 150 tons at $7.37½. The screenings of same sold at $5.50.—*Commercial Herald.*

St. Louis, Mo. March 26, 1878.

[Reported by JAMES J. SYLVESTER, Secretary of the Anthracite Coal Association.]

Retail prices, delivered. Ton of 2,000 lb.

ANTHRACITE.

	Per ton.		Per ton.
Lackawanna	$8 00@8 50	Schuylkill	$8 00@8 50
Wilkes-Barre	8 00@8 50	Lehigh	9 00@9 50

BITUMINOUS.

Blossburg	$9 00	Big Muddy	$3 00
Pittsburg	4 50	Illinois Coals	2 50@3 00
Indiana Block	4 00	Connells. Coke	6 50

Richmond, Va. March 26, 1878.

[Specially reported by S. H. HAWES, Dealer in Coal.]

Per ton of 2,240 lb. f.o.b.

Kanawha Cannel	$9 00	New River Bituminous	$3 70
Coalburg Splint	5 70	Clover Hill Coal	3 00
Lewiston	5 70	Norwood Gas and	
Kanawha Gas Coal	4 90	Steam Coal	2 70

Rates of Freight on Anthracite Coal to Tide-Water Ports.

SCHUYLKILL COALS. Per ton of 2,240 lb.	From * Pine Grove.	From * Tamaqua.	From * Schuylkill Haven.	From Port Clinton.
To *Port Richmond*, via P. & R. R. R., Main Line, for shipment	1.80	1.75	1.60	.....
To *Harrisburg*, via Lebanon Valley Branch	1.20	1.70	1.55	.....
To *Allentown*, via East Pennsylvania Branch	1.47	1.42	1.27	.....
To *Lancaster*, and Points on Lancaster Branch, via R. & C. R. R.	1.59	1.54	1.39	.....
To *Dauphin*, via Schuylkill and Susquehanna Branch	1.03	1.42	1.27	.....
To *Slatedale Junction*, via Berks and Lehigh ranch	1.62	1.57	1.42	.....
To *Lebanon*, via Lebanon and Tremont Branch	94	.....	.....	.....
To *Philadelphia*, via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of loading, trimming and unloading)	.....	.....	1.50	1.40
To *New York*, via Schuylkill Canal, including freight and charges for the use of cars and barges and tolls on the Schuylkill Canal and Delaware & Raritan Canal and the towing between Fairmount and Bordentown and between New Brunswick and New York (exclusive of cost of loading, trimming and unloading)	.....	.....	2.40	2.30

From *Tamanend*† to *Catawissa, McAuley, Mainville, Rupert* and *Danville*, via Catawissa & Williamsport Branch Railroad 100

From *Tamanend*† to *Williamsport, Hall's* and *Montoursville*, via Catawissa & Williamsport Branch Railroad 135

†Coal sent to points on the Catawissa and Williamsport branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

A deduction of 15 per cent. will be made from the above rates upon all coal consigned for actual consumption at iron works upon the line of the railroad, any of its branches, or the Schuylkill Canal.

An additional charge of 25 cents per ton will be made on Chestnut and Pea coal to whatever point consigned. If the shipper signs a release of all demands arising from a deficiency of weight at the place of destination, and agrees to indemnify the company from all claims by reason thereof, such additional charge will not be made. Releases, properly prepared, will be furnished, and can be signed at the coal offices of the company, at St. Clair, Palo Alto, Schuylkill Haven, Mount Carbon, Pine Grove and Tamaqua.

*For shipment via Main Road or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional to Schuylkill Haven, Pine Grove, Tamaqua or Port Clinton, for Canal, as the case may be. Provided no charge shall be less than 15 cents, or greater than 45 cents per ton.

For consumption at local points in coal region, including Shamokin, Herndon, Schuylkill Haven, Pine Grove, and Tamaqua, three cents per ton per mile, and two cents per ton additional; and a charge for *car service* of fifteen cents per ton to individuals, and five cents per ton to manufacturers, when in Philadelphia & Reading Railroad cars, provided no charge, including freight tolls and car service, shall be less than twenty-five cents per ton.

Sent Westward via Northern Central Railway (in N. C. R. W. Co.'s cars), four and two-tenths cents per ton per mile, to Locust Gap, Shamokin, or Herndon, provided no charge will be made less than fifteen cents per ton.

One mile extra will be added for coal passing through the East Mahanoy Tunnel.

Fractions of distances and rates will always be stated in *tenths*.

No charge will be made for weighing or making returns of coal shipped, and the latter will be furnished free of charge, upon application to the weighmaster; if these returns are to be sent by mail, envelopes, properly stamped and addressed, must be furnished to the weighmasters.

All coal will be charged the rates (both lateral and main line) current on the day it is weighed; it will also be waybilled on the same day.

Circulars relating to the above freights will be found in the "Coal Trade Review," in this issue of the JOURNAL.

Freights.

Per ton of 2,240 lb.

Representing the latest actual charters to March 28, 1878.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me			
Albany			
Alexandria, Va			
Brooklyn, N. Y			
Bangor, Me	$1 40		
Bath, Me		$1 35	90
Baltimore			
Boston, Mass	1 06@1 30	1 35	80@90
Bridgeport, Conn.		1 30	50
Bristol, R. I			80
Beverly, Mass			80@90
Cambridge, Mass.			80@90
Charleston, S. C.	1 20		
Danversport, Mas	1 15		
East Cambridge, Mass			
Fredericksbrg, Va			
Fall River		1 30	70
Gloucester	1 25		
Georgetown, D.C.			
Hartford, Conn			
Hoboken			35
Hudson, N. Y			
Jersey City			35
Lynn, Mass			
Marblehead, Mass			
Middletown			90
Medford, Mass			
Nantucket, Mass.			90
New Bedford		1 30	80
Newburyport		1 50	1 00
New Haven		1 30	50
New London		1 30	50
Newport			70
New York	80@90@95	1 20	35
New Orleans, La.			
Norfolk, Va			
Norwich	1 06		65
Norwalk, Conn			55
Philadelphia			
Portland	1 35	1 35	80
Portsmouth, N.H.		1 50	90
Providence			70
Quincy P'nt, Mass			
Rockport			
Richmond, Va			
Saco			
Salem, Mass		1 35	80@90
Saybrook, Mass			
Savannah, Ga			
Somerset, Mass	1 00@1 12		75
St. John, N.B			
Wareham			
Washington	70		
Wilmington, N.C.			
Wilmington, Del.			

* And discharging and towing. † And discharging. ‡ And towing. § 3c. per bridge extra.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March 29, 1878.

American Pig.—The business of the past week has been very quiet. Those buyers who have credit are unable to get such brands of iron as they desire at prices meeting their views, while buyers who have but little credit are willing to assume the payment at prices asked, and are unable to secure the iron. These causes together produce quietness, although, if they were removed, there would not be an active business for any great length of time, as the actual necessities of the market are being supplied. The efforts to advance the price of coal, and the inability of makers to cover cost of manufacture at the present selling rates is preventing them from contracting for future delivery, or even pressing prompt sales unless it be in cases where their financial necessities are very pressing. We quote No. 1 foundry at $17.50@$18.50; No. 2 foundry, $16.50@$17.50, and forge, $16@$16.50.

Scotch Pig.—There is only a retail business doing in this. The greater probability of war in Europe may advance insurance and freights, but there will be the counterbalancing effect of an increased depression in the British iron trade and probably lower prices. We quote Eglinton at $23; Coltness, $25, and Glengarnock, $24.

Rails.—We learn of sales of about 3,000 tons of steel rails on the basis of $43.50@$44 here. The market for early delivery is much firmer, the mills, on an average, being supplied with orders for five or six months ahead. Iron rails are quite nominal, without business, at $33@$36.

Old Rails.—We learn of no transactions in these, and quote nominally at $18.

Wrought Scrap is exceedingly quiet and quoted at $21@$22 from yard.

Baltimore, Md. March 25, 1878.

[Specially reported by Messrs. R. C. HOFFMAN & Co.]

The pig iron market remains unchanged, and we quote present prices as follows:

Balt. Char.	$29 00@$30 00	M. & White	$14 00@$16 00
Va. "	28 00@ 30 00	C'l C. B. Blooms	50 00@ 55 00
Anth. No. 1	19 00@ 21 00	" " Billetts	55 00@ 60 00
" " 2	18 00@ 20 00	Refi'd Blooms	45 00@ 50 00
" " 3	17 00@ 18 00		

Buffalo. March 28, 1878.

[Specially reported by Messrs. PALEN & BURNS.]

No. 1 Foundry	$20 50
B 1 "	20 00
No. 2 "	19 50
Silver Gray	19 00
American Scotch A 1	20 50
" " B 1	19 50
" " No. 2	19 00

Chattanooga, Tenn. March 25, 1878.

[Specially reported by J. F. JAMES, dealer in iron & metals.

The pig iron trade South remains unaltered in prices and demand, and with the exception of two sales of Standard mill iron aggregating 2,500 tons effected last week, I have nothing of interest to report. Stocks at a number of the furnaces below are accumulating. The mills are working full time with a fair amount of orders on hand. Prices are too low to be remunerative.

Tenn., Ala. & Ga. Charcoal, No. 1 Foundry	$18 00@$19 00
Tenn., Ala. & Ga. Charcoal, No. 2 Foundry	17 00@ 18 00
Tenn., Ala. & Ga. Charcoal, Gray Forge	15 00@ 16 00
Tenn., Ala. & Ga. Coke, No. 1 Foundry	19 00@ 20 00
Tenn., Ala. & Ga. Coke, No. 2 Foundry	17 00@ 18 00
Tenn., Ala. & Ga. Coke, Gray Forge	15 00@ 16 00
Tenn., Ala. & Ga. cld B. (car-wheel)	20 00@ 28 00
Charcoal or Coke, white and mottled	14 00@ 15 00

Old rails	$18 00@$19 00	Wr'ght scrap, No. 2	$12 00
Old car wh'ls	16 00@ 17 00	Cast scrap	10 00
Wr'ght scrap, No. 1	17 00	Muck bar	32 00@ 33 00

Iron Ores.

Red Hematite (about 55 per cent. metallic iron) f. o. c. at mines	$1 25
Brown Hematite (about 55 per cent. metallic iron)	1 75

Columbus, Ohio. March 26, 1878.

[Specially reported by Messrs. KING, GILBERT & WARNER, dealers in Pig Iron and Ores.]

There has been an increased demand for pig iron during the past week, and the general opinion seems to be that bottom prices have been reached. Consumers are more ready to make contracts for future delivery. The usual time, 4 months, allowed on quotations.

FOUNDRY IRONS.

No. 1 Hanging Rock Charcoal	$23 50@$24 00
No. 2 "	22 00@ 22 50
No. 1 Hocking Valley soft and strong from pure limestone ores	20 00@ 20 50
No. 2 Hocking Valley soft and strong from pure limestone ores	19 00@ 19 50
No. 1 American Scotch	19 00@ 19 50
No. 1 Moxahala	20 00@ 20 50
No. 2 "	19 00@ 19 50
No. 1 Shawnee	19 50@ 20 00
No. 1 Eliza (Jackson County)	19 00@ 19 50
Silver Gray	17 50@ 18 00

MILL IRONS.

Gray neutral	18 00@ 18 50
Mottled and white neutral	17 00@ 17 50
Gray cold short	17 00@ 17 50
Mottled and white cold short	16 00@ 16 50

Louisville, Ky. March 26, 1878.

[Specially reported by Messrs. GEORGE H. HULL & Co.]

There is a fair demand for all grades of iron. Prices have not changed materially, though most of the lots forced on the market recently at low prices have been disposed of, and the same grades are held at higher figures. We revise quotations as below. The usual time, 4 months, allowed on quotations below.

FOUNDRY IRONS.

	No. 1.	No. 2.
Hanging Rock Charcoal	$21 50@$22 50	$19 00@$20 00
Southern Charcoal	19 00@ 20 00	18 00@ 19 00
H'n'g Rock, Stc'l & Coke	19 00@ 20 00	18 00@ 19 00
Southern Stonecoal & Coke	19 00@ 20 00	18 00@ 19 00

"Amer. Scotch"... $19@$20 | Silver Gray..... $17@$18

MILL IRONS.

No. 1 Charcoal, Cold-short & Neutral	$17 00@$17 50
No. 1 Stc'l & Coke, Cold-short & Neutral	17 00@ 17 50
No. 2 Stc'l & Coke, Cold-short & Neutral	16 50@ 17 00
No. 1 Missouri and Indiana, Red-short	20 00@ 21 00
White & Mottled, Cold-short & Neutral	14 00@ 16 00

CAR-WHEEL AND MALLEABLE IRONS.

Hanging Rock, Cold Blast	$34 00@$36 00
Alabama and Georgia, Cold Blast	25 00@ 32 00
Kentucky, Cold Blast	25 00@ 32 00

Milwaukee, Wis. March 25, 1878.

[Specially reported by Messrs. R. P. ELMORE & Co.]

CHARCOAL IRON.

No. 1 Lake Superior per gross ton	$23 00—4 mos.
" 2 " " " "	22 00—4 mos.

ANTHRACITE IRON.

No. 1 Anthracite per gross ton	24 00—4 mos.
" 2 " " " "	23 00—4 mos.

STONE COAL AND COKE.

Warner's Am Sc'th (Bk. Band, per ton	$25 00@ —4 mos.
Soft Silvery per ton	22 00@23 00—4 mos.
Ohio Stone Coal	22 00@23 00—4 mos.

CAR WHEEL.

Lake Superior ores per ton	$25 00@27 00—4 mos

Pittsburg, Pa. March 26, 1878.

[Specially reported by A. H. CHILDS.]

The market is exceedingly dull and prices are unchanged.

	4 mos.		4 mos.
No. 1 F'dry	$20 00@$21 50	M. & White	$16 00@$17 00
No. 2 "	19 00@ 20 00	Hot Blast Ch.	20 00@ 25 00
Gray Forge	17 50@ 20 00	Cold Blast W.	@ 35 00

Philadelphia, Pa., March 28, 1878.

[Specially reported by JUSTICE COX, JR., & CO., Iron Merchants, 333 Walnut street, Philadelphia.]

Pig Iron.—There is little of interest to report. Sales of pig are confined to small lots for immediate use. An order for cast pipe was given out by one of the New England cities this week, and is reported taken at a low price, but the foundry taking the contract is said to have the iron on hand; so this brings no new sales to the furnaces. The market is firm in prices, in spite of the limited sales; the price of coal is such that present prices for pig must be maintained, or furnaces will blow out. We report sales of 2,000 tons, and quote the market firm at $18.50 to $20 for No. 1; $17 to $18 for No. 2; $16 to $18 for Gray Forge.

Manufactured Iron.—The demand for bars is exceedingly light for the season and few, if any, large contracts are being made. In plate and tank little new is reported, and mills are running only on order from day to day. Nothing new is reported in skelp; a small order was placed this week at full prices. We quote bars, common, $1.65 to $1.90; best refined, 2 to 2 1-10c. ℔ lb. Plate and and tank, 2⅝ to 6c. ℔ lb. Skelp, 2 to 2 1-10c. ℔ lb.

Rails.—Nothing new is reported in steel rails. Prices are firm. We quote, $41.50 to $43 at mills. In iron rails only inquiry and order for small lots are reported. We quote $33 to 35 at mills,

Old Rails.—The demand for old rails is not so brisk as a month or two back, hence prices are not so firm. We quote $19.50 to $20.50.

Scrap.—Wrought scrap is dull of sale and quoted at $20 to $24. Cast is quiet at $12 to $16.

Muck Bars are quiet at $32 to $35.

Old Wheels are quoted at $17 to $18.

Richmond, Va. March 26, 1878.

[Specially reported by ASA SNYDER, Esq.]

The activity of our foundries and machine shops continues, although they buy for work in hand only. About two hundred tons of foundry pig iron have been taken by them the past week. I have no change to report in quotations.

Amer. Scotch Pig Iron	$23@$24
Anthracite " " No. 1	20@ 21
" " " No. 2	19@ 20
" " " No. 3	18@ 19
" " " Mottled	16@....
Coke " " No. 1	22@....
" " " No. 2	21@....
Virginia Cold Blast Charcoal Pig Iron, cold short	20@ 24
" " " " " " neutral	28@ 29
" Warm " " " " cold short	19@ 22
" " " " " " red short silver grey	18@ 19
Old Rails	17@ 18
Wrought scrap No. 1	20@....
Cast scrap —— Machinery	18@....
Richmond Refined Bar Iron	2@2¼c
Horse-shoes	$4 50@4 75
Mule-shoes	5 75@ ....
Old Dominion nails (standard size)	2 60 keg.

San Francisco. March 21, 1878.

The market is sluggish for all sorts, and prices more or less nominal. Last week we made the following announcement, which we now repeat, as that edition has been entirely exhausted. A new price-list has just been issued by the Selby Lead Company, showing a marked reduction in prices. We quote lead pipe, 7c.; sheet lead, 8c.; bar lead, 6@6½c.; pig lead, 4¾@5¼c.; shot, $2@2.62½ per bag; 10 per cent. discount. The Oceanic, for Hong Kong, carried of pig lead 878,240 lb.—*Commercial Herald.*

St. Louis, Mo. March 27, 1878.

[Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.]

We notice some little improvement in the demand for pig iron the past week, but prices remain very low, with little prospect of any advance.

COLD BLAST CHARCOAL—ALL NUMBERS.

Hanging Rock	$25@$34	Assorted Bar Iron	$2, rates.
Tennessee	26@ 30	No. 1 Wr'ght Scarp, 80c. cwt	
Kentucky	25@ 30	Heavy cast "	65c. "
Missouri	26@ 28	Light " "	55c. "
Georgia	24@ 26	Old rails	$20 00@$20 50
Alabama	24@ 26	Old carwheels	17 00@ 18 00

	No. 1.	No. 2.	Mill.	White and Mottl'd
Missouri stone coal	$20 50	$21 00	$20 00	$19 00
" charcoal	20 50	19 50	18 50	18 00
Tennessee charcoal	22 00	21 00	19 00	17 00
Tenn. coke very soft and strong	21 00	20 00	19 00	17 50
Hanging Rock charcoal	25 00	24 00	.....	.....
" " cold short	22 00	21 00	.....	.....
	ExNo.1	No. 1.	BNo.1.	No. 2.
Alice Hanging Rock coke.	$24 00	$23 00	$22 50	$21 50
Quinnimount, W. Va., coke.	24 00	22 50	21 50	20 50

METALS.

NEW YORK, Friday Evening, March 29, 1878.

The past week has been very quiet and prices have been weak. At the close, the stronger indications of war in Europe had the effect of making an unsettled market.

Receipts of Metals at New York for the week ending March 28, 1878:

Copper, bbls	147	Spelter, pieces	746
Lead, pigs	10,015		

Gold Coin.—During the week under review, the price of gold has ranged from 101 to 101⅛, and closed at 101⅛.

Bullion.—Silver has advanced in London the past week, mainly on purchases for the United States Treasury for coinage purposes. Without these purchases, the market would undoubtedly have been lower, as the state of exchanges with India was unfavorable to the export of silver from London. The future of the market here will turn mainly on the demand for coinage purposes. At present our market is firm

at 120. London quotes 54½d., and San Francisco 8 per cent. discount.

DATE.	London Pence.	N. Y. Cents.	DATE.	London Pence.	N. Y. Cents.
Mar. 23 ...	54 3-16	119	Mar. 27.	54⅛	119½
Mar. 25....	54¼	119	Mar. 28.	54⅝	120
Mar. 26....	54¼-⅜	119¼	Mar. 29.	54 9-16	120

The engagements of gold coin for Saturday's steamers are now reported as $1,250,000, chiefly to cover purchases of silver bullion in London for treasury account, or on account of bankers who have contracted with the treasury to deliver their bullion here.

BULLION SHIPMENTS.

We give below a statement showing the latest bullion shipments, in addition to those announced in our issue of March 23:

March 13.	Tybo Con.,	Nevada		$14,374.91
" 13.	Northern Belle,	"		3,764.05
" 11.	Raymond & Ely,	"		2,750.89
" 18.	Grand Prize,	"		13,400.00
" 20.	California,	"		*770,642.99
" 20.	Con. Virginia,	"		†413,432.02
" 18.	Manhattan,	"		32,937.00
" 17.	Hussey Con.,	"		5,620.00
" 15.	Bechtel,	Cal		15,316.67
" 15.	Standard,	"		16,387.00
" 18.	Christy,	Utah		11,360.00

* From March 9 to March 20, inclusive.
† " " 13 " " 20. "

Importation of Material for Manufacturing the New Dollar.—LONDON, Thursday, March 28, 1878.—It is said that a considerable amount of silver was purchased for shipment to New York yesterday. The amount is variously stated at from $750,000 to $1,500,000.

It is also stated that gold was paid out on account of this purchase.

Failure of the Silver Certificate Bill.—The Philadelphia *Ledger* of the 28th inst says: "The recent failure of the Silver Certificate bill to get a two-thirds vote in the House of Representatives makes it tolerably certain that the Government is not yet going into the business of advancing, free of interest and for an indefinite time, what would be lawful money on pledge of silver bullion. Just here the New York *Post* makes this good point: 'When the owner of merchandise or movable property goes to the bank to borrow thereon, the bank lends a smaller amount than the market value of this property. What this bill proposed was that the United States Treasury should lend 78⅝@8 per cent. more than the present value of the bullion, the loan to be payable at the pleasure of the borrower, and it to carry no interest. It is cheering to know that even so modest a proposal could not get a two-thirds majority vote in the House. The proposal to suspend the operation of the sinking fund for a number of years also failed to get a two-thirds vote, which is also a matter of congratulation in these times.'"

Copper.—Sales of from 200,000 to 300,000 lb. at 16⅞@17c. have taken place during the past week; 16⅞c. is bid and 17⅛c. asked, while business could probably be done at 17c. The outlook for placing in Europe a large stock of our copper, without making a heavy concession, is not encouraging at present.

Tin.—We are reported sales of about 50 tons of straits to arrive, and 500 pigs on spot at 14½@14⅝c. The market suddenly advanced at the close to-day to 14¾c. The latest London quotation is £64. L. & F. n this market is still quoted at 14⅝c. Refined is ominal, at 15c.

Tin Plates.—Our market, in sympathy with that of England, is weaker. Below we give mail advices showing a decline. Later telegraphic advices note a till further decline. The business of the week up to to-day has been quiet, although there was an improvement to-day. We quote, in gold, per box, as follows: Charcoal tins, $6.12½, and ternes $5.62½; coke tins, $5, and ternes, $5.

Messrs. Robert Crooks & Co., of Liverpool, under date of March 14, say of tin and terne plates: "We have again been able to reduce prices of a few brands, where order books are running down, and the trade is very quiet for all classes of plates. Charcoal tins, of fair quality, are procureable at 18s. 3d. to 18s. 6d., for half and third cross specifications. Ternes, 17s. 6d. to 17s. 9d., for all common. Coke tins, B. V. grade, are freely offering at 16s. 3d., and can, in some cases, be had for 16s. Ternes are more firmly held at from 15s. to 15s. 3d."

Lead.—The business done during the past week has only been in a retail way at $3.80@$3.87½, which are the closing figures, although the market is weak, owing to lack of demand.

The San Francisco *Commercial Herald* of March 21 says: "The Oceanic for Hong Kong carried of pig lead 878,240 lb.

The Salt Lake City correspondent of the Chicago *Inter-Ocean*, under date of March 20, says: "The Germania is getting ready to start their refining works, and have contracted for two months' production, to go to Japan."

Spelter and Zinc.—Both of these articles are very quiet. The former is quoted at 5¼c., and the latter at 6⅛c.

Antimony.—Without much business this article is quoted at 12½@13c., gold, according to brand.

Quicksilver.—The San Francisco *Commercial Herald* says: "The daily receipts are yet light, still there is enough stock here to supply the present restricted demand. As soon as the roads become passable the receipts from the Sulphur Bank and other mines will be largely increased. The present nominal price is 43c. The receipts for the week are 441 flasks."

Salt Lake Ore and Metal Market.

SALT LAKE CITY, Utah, March 29, 1878.

Argentiferous Lead (Base Bullion), $32 per ton for lead: $1.16 per ounce for silver; $20 per ounce for gold. The quotations for silver are based upon the silver in the lead of 80 to 120 ounces per ton of 2,000 lb.

Our correspondent advises us, under date of the 23d inst., that the Barbee & Walker mill has commenced crushing on Silver Reef ores, and that the old Telegraph Company had made a shipment on the 22d inst. of 3,843 oz. of silver as the product from its leaching works.

The *Inter-Ocean's* correspondent, under date of the 18th inst., says: "The warm weather continues, and the roads are dry again. The shipments f ore and bullion for the week ending March 16 were as follows: 17 cars bullion to Pittsburg, 2 cars bullion to New York, 3 cars bullion to Newark, 2 cars bullion to Omaha, 3 cars lead ore to Hilliard, 3 cars copper ore to Phœnixville, Pa. Total cars, 30; bullion, 515,530 lb.; lead ore, 65,925 lb.; copper ore, 63,555 lb.; total, 645,011 lb. This is the lightest shipment of bullion that we have had for years, and our shipments must continue light from this time forward, unless the price of lead advances. The new leaching process seems to work well on most of ores, and will enable us to do without the lead. Our new District Attorney and Surveyor General have arrived. The great mining suit of the owners of the Carbonate and Sailor Jack mines commences to-morrow.

SALT LAKE, March 21.—A citizens' meeting was held here this evening, with a view of inducing the Government to establish a branch mint at this place. A committee was appointed to report one week from to-night.

The following is from the Salt Lake *Tribune* of the 23d inst.:

"About 125 tons of ore comes in from the Yosemite Mine, Bingham Cañon, every week.

"The Extension of the Yosemite will commence to ship to Sandy next week, and, it is said, will average 100 tons a week.

"The shipments from the Carbonate averages about 150 tons a week, which is soon to be increased to 300 tons.

"The Flagstaff ore is rolling in at the rate of 75 or 100 tons per day."

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, March 29, 1878.

The coal shares have taken part in the general activity that ruled at the stock exchange. Delaware & Hudson has ranged from 50⅛ to 56¼, with sales of 20,375 shares, closing at 54. Delaware, Lackawanna & Western, with sales of 171,521 shares, advanced from 51⅞ on Monday to 56¾ to-day, closing at 54½. The advance in these prices is the result of a well-planned "bull" movement which appears to have brought with it more legitimate transactions in these stocks than have ruled this year. During to-day, however, it is said that it was discovered that one of the large speculators who has been identified in sustaining these stocks, was unloading, and the market suffered quite a reaction, being quite weak at the close.

Delaware, Lackawanna & Western Railroad.—It is marvelous how little a foundation is sufficient to build a Wall street castle on. Here is the Delaware, Lackawanna & Western Railroad Company, whose stock has been going up and up during the past two weeks on the very attenuated foundation of the following statement, which the *Commercial Advertiser* (March 21) calls "a clear and comprehensive statement of the condition and prospects" of the Delaware, Lackawanna & Western Railroad:

"Some time since, in the middle of February, we think, there was published in one of the city papers a statement of the present condition, also an outlook for its future. Lately the subject has been carefully investigated by an expert accountant, and the following result obtained:

"In the year 1875 the Delaware, Lackawanna & Western Railroad Company produced and sold 2,788,697 tons of coal at an average price of $4.32 per ton. The net result of the business for the year was $2,371,640, distributed to stockholders, and $1,634,643 carried to credit surplus earning; total, $4,006,286, equal to $1.43.66 per ton on all the coal sold. This left $2.88 per ton as the cost of the coal, including mining royalty, maintenance of property and roads, transportation expenses of all kinds, interest, rentals, etc.

"The Delaware & Hudson Canal Company estimate the cost of mining and delivery of coal to the market for the year 1877 at 75 cents per ton less than in 1875. Applying this to the Delaware, Lackawanna & Western Railroad Company for 1877, we have the cost at $2.13 per ton.

"The Company's property was idle during the Summer strike, a period of ten weeks, during which they should have taken out and sold 500,000 tons, which, at $2.13 per ton, would have given $1,065,000, an amount exceeding the reported losses for the year $157,000. It is clear from this that the greater part of the loss on the business of the year resulted from this total suspension of operation.

"By the new arrangement the Company is entitled to sell 2,500,000 tons in 1878, and, estimating the reduction in the cost at 50 cents per ton, instead of 75 cents, compared with 1875, they must obtain to cover all charges specified above, $2.38 per ton. An average price of $3.25 per ton realized —which is certainly low enough to satisfy the most obstinate grumbler, not entirely agrarian in his impulses—would leave 87 cents per ton for the stocks. This, on 2,500,000 tons, would be $2,175,000, equal to nearly 8⅛ per centum.

"What reason is there for the owners of this property to doubt its capacity for rapid resuscitation and its ultimate great value? 2,788,696 tons of coal produced $4,066,283, equal to $1.43.66 per ton; 2,788,696 tons of coal sold at $4.32 per ton—$4.32 less $1.43.66—leaves $2.88 cost; $2.88 less reduction in cost on production of 50 cents per ton is $2.38 per ton for cost in 1878; $3.25 per ton obtained in 1878, less $2 38 cost, leaves 87 cents per ton profit; 2,500,000 tons sold at a profit of 87 cents, is $2,175,000, which is equal to 8⅛ per cent; on $26,000,000 capital.

"The following is the outlook of the Delaware, Lackawanna & Western Railroad Company for the year 1878:

Net earnings from transportation (same as 1877)		$4,401,858.39
Profit on 2,500,000 tons of coal, say 50 cents per ton		1,250,000.00
Total		$5,651,858.39
Less interest on bonds (same as 1877)	$201,957.00	
Less interest on stocks and rentals (same as 1877)	3,185,262.34	
		$3,387,219.34
Surplus applicable to dividends		$2,264,639.05

Equal to 8 64-100 per cent. on stock.

The coal business in 1877 was as follows:

Product of its own mines	tons	1,184,433
Purchase		856,233
Total		2,040,666

The loss on this coal was $1,922,660.99, equal to 94.12 cents per ton.

LIABILITIES.

To December 31, 1877		$4,681,240.87

LESS ASSETS.

Cash on hand	$360,970.77	
Coal on hand	217,314.00	
Bills receivable	95,166.26	
Advances for construction on leased lines...(a)	265,387.21	
Advances on coal	452,353.98	
Accounts receivable...(b)	1,596,878.66	
		2,988,070.88
Liabilities over assets		$1,693,169.99
(a) Add advances for construction on leased lines, as the amount expended cannot be recovered, and should not be accounted for a live asset*		265,387.21
Total floating debt		$1,958,557.20

(b) Any amount of accounts receivable, which is not perfectly collectible, should be added to the total amount of floating debt.

* This will be repaid out of rentals.

The "Expert Accountant" here referred to is the same who made in 1871 for Jay Gould a "clear and comprehensive statement" of the prospects of the Erie Railway, in which he showed "clearly" that the Erie Railway would earn from October, 1871, to March, 1872 (six months) $9,922,828, while the actual earnings were $8,672,664, or, $1,250,164 less than estimated. It is not surprising, then, to find this useful, extra-sanguine "Expert Accountant" showing "clearly" to the *Commercial Advertiser* that the Delaware, Lackawanna & Western is on the point of making dividends. It is, however, somewhat astonishing how brokers or investors should be so credulous as to place any confidence in such testimony.

Without attempting a full analysis of this "statement," we may indicate a few points for consideration.

The average combination circular prices for coal in 1875, f. o. b., New York ports, was $5.34 per ton. While we are told here the company received an average of only $4.32, or about one dollar less than New York prices, which cannot therefore be taken as the average price obtained by the company now.

This Expert Accountant bases his estimation of profits to be earned this year on the statement that the company can put its coal in the New York market at $2.38 per ton, "including mining, royalty, maintenance of property and roads, transportation, expenses of all kinds, interest, rentals, etc., etc., and that the company will realize an average of $3.25 per ton.

The "Expert Accountant" admits that the company lost over 94 cents a ton on its coal last year, when the average of the auction prices was $2.70 a ton. The average of the three sales this year was $3.34 a ton, which is considerably above the average received for all the company's coal. This would still leave a loss of 30 cents a ton; but the "Expert Accountant" wholly ignores the fact that the company has some $700,000 more interest to pay this year than last (on its new ten million loan), and he over-estimates the amount of coal the company will market this year by about 500,000 tons. Instead of a *profit* of 50 cents at on, which this "clear" statement estimates, the figures given show a net loss of more than that amount per ton. We must look to something else than "profit on coal" for any basis for the recent advance in this stock. Probably the cause can be found, as is freely intimated, in the manipulations of the clique, and investors will do well to let the wolves devour each other.

The advance in the stock and the bonds of the Central Railroad of New Jersey has been a prominent feature of the week. The stock closed to-day at 17, an advance of 3 per cent from the quotations ruling a week ago. The sales aggregate 6,600 shares. In the bonds the dealings aggregate the extraordinary total of $258,000 all of the various issues closing at enhanced rates.

Baltimore & Ohio R. R.—The continued decline in this stock is worthy of mention, sales of the common stock being made on the Baltimore Market yesterday at 85 on the $100 against par on the first of the year.

The Wheeling *Intelligencer* says that "Baltimore City owns three and a half millions of the stock of the Baltimore & Ohio road, John W. Garrett one and a half millions and John Hopkins' estate one and one-fourth millions. It is now said that the road did not earn its last semi-annual dividend of three per cent. Whether it will declare one in April remains to be seen."

The trustees of the John Hopkins' University are, we understand, alarmed for the safety of that institution's endowment, which consists of B. & O. stock.

Cleveland, Tuscarawas & Wheeling Railroad.—This company during the past year received from freights, $412,318; passengers, $70,427; mail, express, etc., $8,707; total earnings, $491,463; the operating expenses for the year were $309,934; net earnings, $181,528.

Rome, Watertown & Ogdensburgh R. R.—It is announced that the April coupons on the consolidated bonds will not be paid. It is expected that the holders of the bonds will shortly be invited to a conference with the officers of the company. Interest on the prior lien bonds will continue to be paid.

This default is not unexpected, as is shown by the fact that the bonds have been selling as low as 41½. The older part of the road is fairly profitable, but for several years it has been working a good deal of new road with very light traffic and the net earnings have been less than the interest charges.

Lycoming County (Pa.) R. R.—Surveys are being made for a railroad from the Northern Central at Minnequa, Pa., west by south to a point in Pine township, Lycoming County, a distance of about 33 miles. The object is to reach a large tract of coal land owned by some parties in Boston.

Scioto Valley R. R.—Surveys are to be made for a branch from Kingston, O., east through Adelphi and Laurelville to a point in the Hocking Valley coal region. This branch would be about 35 miles long.

Pennsylvania Anthracite Coal Co.—50 shares of this stock sold at the Stock Exchange to-day at $73 per share.

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in here, at Philadelphia and Baltimore for the week ending the 29th inst are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

STOCKS.	Par Value.	High'st	Lowest	Closing	Sales: Shares.
American Coal Co.	$25	.....	.....	30	.....
St.L.,I.M.& S.R.Co..	100	7¼	6¼	6¾	515
Spring Mt. Coal Co.	50	.....	.....	35	.....
*Cambria Iron Co..	50	.....	.....	51½	.....
*Penn. Salt Mf'g Co.	50	.....	.....	64½	.....
*Westm'land C. Co.	50	.....	.....	70	.....
*Buck Mt. Coal Co..	50	.....	.....	30	.....
*Schuyl. Nav. Co..	50	.....	.....	.....	.....
†B.&O.RR.Co.1st pf	.....	.....	.....	.....	.....
†B.&O.RR.Co.2d pf	100	.....	.....	.....	.....
" " " " com	100	86	85	83	24
†George's C'k C. Co	100	.....	.....	90	.....
†S. Clara M'g Co...	100	.....	.....	25c.	.....
†Atlantic Coal Co.	10	.....	.....	1.00	.....

BONDS.	Princ'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1892	J. & D.	100	....	$3,000
" " " " 2d mtge.	1881	M. & S.	.....	.....	.....
N.J.C.,1stmtge.new	1890	F. & A.	111½	110¾	11,000
" " " 1st mtge.,con	1899	Q.	67¼	64½	115,000
" " " convt.....	1902	M. & N.	66½	64	28,000
Lehigh & W. B., con	1899	Q.	38¼	35½	88,000
Am. Dock & Imp. 7s	.....	J. & J.	44	43½	16,000
St.L.I.M.& S..1st mt	1892	F. & A.	104½	104	25,000
Ches. & O., 1st mtge	1899	M. & N.	24	.....	1,000
D & H C Co.,1stm.rg	1884	J. & J.	94½	94¼	13,000
" " " " "	1891	J. & J.	96	95¼	17,000
" " " " m.loan cp	1894	A. & O.	98	96	15,000
" " " " " rg.	1894	A. & O.	.....	.....	.....
" " " " new mge.	.....	.....	.....	.....	.....
*L.V.R.,1stm.6s.cp.	1898	J. & D.	.....	.....	.....
" " " " rg.	1898	J. & D.	111	.....	2,000
" " " 2d m. 7s,rg.	1910	M. & S.	113½	.....	2,000
" " " con.m.6s,rg	1823	J. & D.	.....	.....	.....
" " " " 6s cp.	1923	J. & D.	.....	.....	.....
*Pa.RR.,1st m.6s,cp	1880	J. & J.	104¼	.....	1,000
" " g. m., 6s, cp.	1910	J. & J.	106½	....	1,000
" " " 6s, rg.	1910	A. & O.	109	.....	5,000
" " con.m.6s,rg.	1905	Q.	91	....	2,000
" " " 6s, cp.	1905	J. & D.	92¼	.....	7,000
" " new loan, 5s	.....	.....	110¾	.....	19,000
*P.& R. R., 1st m.6s, R. C. 43-44.....	1880	J. & J.	.....	.....	.....
P. & R. R., 1st m. 6s, R. C. 48-49.....	1880	J. & J	.....	.....	.....
P.& R. R.,2d m.7s cp	1893	A. & O.	112¾	.....	7,000
" " " scrip....	1882	J. & J.	.....	.....	.....
" " " in.m.7s,cp	1896	J. & D.	.....	.....	.....
" " " c.m.7s,cp.	1911	J. & D.	100	99½	4,000
" " " " 7s. rg.	1911	J. & D.	100¼	100	12,000
" " " cvt.7s,R.C	1893	J. & J.	.....	.....	.....
" " C.& I.Co.,Deb 7s, R. C.....	1892	M. & S.	43	....	3,000
.& R.C.& I. Co., m. 7s, R. C.....	'92-3	various	.....	.....	.....
L. Nav. Co., 6s,rg.m.	1884	J. & Q.	.....	.....	.....
" " RR., rg. m.	1897	F. & Q.	102	.....	800
" " cvt. co. G. R.	1894	M. & S.	98	.....	1,000
" " "Gold R. C.	1897	J. & D.	86	.....	9,000
" " con.m.7s,rg.	1911	J. & D.	.....	.....	.....
*P.& N.Y.C.,7s,R.C.	1896 / 1906	J. & D.	113¼	....	1,000
*Pa. Canal, 6s. cp..	1910	J. & J.	60	58½	13,000
*Schuyl.Nav.,1st m. 6s. rg.....	1897	M. & Q.	.....	.....	.....
*Sus.Coal, 6s, rg...	1911	J. & J.	.....	.....	.....
†Balt.&O. RR., 6s..	1880	J. & J.	.....	101½	.....
" " " " 6s..	1885	A. & O.	.....	106½	.....

Total transactions for the week.....$419,800

Philadelphia Stocks.

PHILADELPHIA, Friday Evening, March 29, 1878.

The prices of coal stocks at Philadelphia exhibit quite an improvement on our last quotations. The sales for the week amount to about 70,000 shares. But little has been done outside of Reading and Pennsylvania. Of the former the sales aggregate about 11,000 shares, and the final price an advance equal to 2 per cent.

The stock of the Pennsylvania Co. closes, also, at an advance, the sales for the week amount to 58,235 shares. This company's statement for February shows that all lines east of Pittsburg and Erie show for the month, as compared with 1877, a decrease of $2,790 in gross earnings; a decrease of $43,637 in expenses, and an increase of $40,847 in net earnings. For the two months ending Feb. 28, 1878, as compared with the same period in 1877, there was an increase of $9,940 in gross earnings, a decrease of $181,584 in expenses, and an increase of $191,524 in net earnings. For the two months all lines west of Pittsburg show a profit, after meeting all liabilities, of $45,698, as compared with a deficiency of $105,409 in the same period of 1877.

At the annual meeting of this company on the 26th inst., the following gentlemen were elected to serve as Directors for the ensuing year: Messrs. Thomas A. Scott, Josiah Bacon, Wistar Morris, John M. Kennedy, Samuel M. Felton, Alexander Biddle, N. Parker Shortridge, Henry M. Phillips, D. B. Cummins and Henry D. Welsh. The total vote polled was over 450,000, being the largest ever received at any election. The opposition to the regular ticket was not organized, but polled some 50,000 votes for Mr. Thomas Potter and Mr. A. J. Derbyshire for Directors. There was considerable scratching of the ticket, and the tellers did not conclude the count until nearly midnight. The resolutions, empowering the Board of Directors to create a funding scheme, was adopted by a vote of about 250,000 for, to 150,000 against it. There are about 1,300,000 shares of the stock, so it shows that the vote registered but a minority of the whole number of shareholders.

AUCTION SALES OF STOCKS AND BONDS.—*Chesapeake & Delaware Canal Co.*—$3,000 6 per cent. bonds, due 1886, registered, at 73¼ per cent.

Lehigh Valley R. R. Co.—$5,000 7 per cent. registered bonds, due 1910 at 113¾ per cent.

Delaware Division Canal Co.—50 shares at $30 per share.

Westmoreland Coal Co.—7 shares at $67 per share.

Mine Hill & Schuylkill Haven R. R. Co.—30 shares at $46½@$46 per share.

Lehigh Coal & Navigation Co.—$3,000 gold loan bonds at 86 per cent.

Huntington & Broad Top Mountain Coal & R. R. Co.—$1,000 cons. mortgage bonds, coupons on from April, 1871, inclusive, at 28 per cent.

Schuylkill Navigation Co.—$200 7 per cent. car and boat loan bonds, registered, at 59 per cent.

Copper Stocks.

Reported by WILSON W. FAY & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveller Building, 31 State street.

BOSTON, Wednesday Evening, March 27, 1878.

The market has been quiet during the week, most of the stocks declining during the lull, scarcely any being taken in them. The market on other things being very lively at present, and offering ample opportunities for the speculator to make or lose money, this line of stocks is neglected, and presents no attraction to the investor, with, perhaps, the exception of Duncan Silver, which at present looks like a rise, and is being picked up quietly on the street by the knowing ones.

Calumet & Hecla sold up to 180¼ and down again to 179¼, and closes rather weak at 178¾@179¾.

Copper Falls is very quiet, having sold at 1½ and declined to 1⅜ bid and 1½ asked.

Franklin, notwithstanding the favorable reports, has declined to 6⅝@7.

Osceola is also weak, there being no transactions in it, and scarcely any demand for it, closing 11@12½.

Pewabic remains 1¼ bid and 1½ asked, and no transactions.

Quincy (new stock) is looking rather soft at 16½@17, there being a questionable sale quoted at 17½, b. 60, which has a tendency to weaken rather than to strengthen the stock.

Ridge is quiet and steady at 1¼@1¾.

Duncan Silver has been in demand during the last few days, some parties going around quietly and picking up all the low-priced stock on the mark. The stock sold to-day at $2, and closes strong at $1 15-16@2¼.

International is steady at 32½ bid and 35 asked, and sales at 35.

Gold and Silver Stocks.

NEW YORK, Friday Evening, March 29, 1878.

The business at the mining exchange this week has not been so great as last. The introduction of the Gold Placer Co.'s stock at over $4, and its rapid decline to $1.50 this week has momentarily demoralized the business of the exchange, but it will soon resume its regular course, and with proper precautions mining stocks will receive an important amount of attention in the East. The sales of the San Francisco stocks aggregate but 425 shares. Hukill has declined from $4.50 to $4.20 under sales of 500 shares for the week. Moose has sold from 9¼ to 8⅛, with sales of 16,800 shares, closing at 8¼; N. Y. & Col., on 400 shares, from $2.15 to $2.10, closing at $2.15; Ontario, on 410 shares, from 34½ to 35⅛; Plumas, on 5,700 shares, from $3.65 to $3.55 to $3.70; Gold Placer, on 6,800 shares, from $2.85 to $1.50 to $2.25 to $2.15. The dealings in the lower priced stocks have been as follows: American Flag, 8,600 shares, at 15@21c.; Bertha & Edith, 62,150 shares, at 12@16c.; Lacrosse, 75,900 shares, at 53@40c.; King's Mt., with sales of 1,100 shares, has advanced from $1.40 to $1.75, the latter buyer 30 days.

In introducing new mining companies in this market it has been customary to let in a "select few" on the "ground floor" (about seventh floor above the original promoters), and in that way expect to get a certain amount of the stock well distributed and so establish a market price for it, and give the appearance of activity. This has always been done with the assurance that the stock would receive support, and when it did, as soon as a margin of profit was shown the "select few" would begin to throw the stock back on the hands of the original holders and compel them to stand a loss rather than the anticipated profit. It was with this experience that a number of members of the Exchange took hold of the Gold Placer stock, and in suffering for it they can command no sympathy from outsiders. The Placer people let their friends look out for themselves rather than sell them stock at $3, and buy it back at $4, as was expected. Hereafter the speculators and members of the Exchange will have to seek the "ground floor" in actual value, rather than that of manipulation and they may then be able to make something, whereas, in their efforts to shove through every new scheme, regardless of merit or value, they will meet but little sympathy or profit. There are many good men connected with the Exchange, but there are others who would endorse anything to make a dollar per share on 100 shares of the stock.

Upon our first examination of the Gold Placer Company's prospectus we advised our readers to give the property a very careful examination before investing at anything like $3 per share. Our further investigations have not tended to increase our opinion of its merits.

The ordinary operator realizes that he has but little show in coping with the experienced hands at the back of this stock and there is now an inclination to leave it severely alone.

The following is a copy of a paper which Mr. L. S. Ballou, of Colorado Springs, Col., represents as having been served on Sydenham Mills, of Denver, Col., and H. G. Angle, of New York.

To the Gold Placer Mining Company and Sydenham Mills' Agent in Colorado:

Take Notice, That as the owner of a majority undivided interest in the placer claims, on the Swan and Blue rivers, in Summit County, Col., I forbid you doing any work upon the same, further than to represent your interest according to local customs. I shall represent my interest at my own expense, regardless of what you do. I shall publish notice that I will not be responsible for any bills contracted by you on account of the property. I refuse to become a mining partner with you in the work of opening the placer claims on the Swan and Blue Rivers. I refuse to be assessed for work. As I own more than a majority interest, I can control the manner and time of work. However, if you go on and do any work, you do it at your own expense and at your own risk. L. S. BALLOU.

Witness—*C. E. Wellesley.*

COLORADO SPRINGS, Col., March 22, 1878.

At the Mining Exchange, this is represented as a part of a scheme to entrap the unwary into selling the stock "short." Be this as it may, it only tends to destroy the little confidence that may have existed in the management of this enterprise, and should warn the public against having anything to do with the stock. We have made especial inquiry into the standing of Mr. Ballou, and learn nothing derogatory to him.

The Plumas company will declare a dividend of 8 cents per share on its capital stock, payable at the company's office, No. 77 Cedar street, in this city. The Plumas *National* of March 9, says of this mine:

"On Sunday evening Mr. H. C. Bidwell, the Superintendent, arrived in town, on his way to San Francisco. He showed us a nice little sack of retorted gold, weighing 48½ lb., valued at $12,730. This was the result of four weeks run of the mill, and averaged $12.50 per ton. It was thought that the rock in the last two weeks paid about $18 per ton. The mine is looking splendidly, the tunnels showing 400 ft. of continuous pay-rock, and indications strong that the future workings will develop better and better."

The Cashier mine of Colorado was called yesterday, and has ranged from $1.05 to $1.10 per share. It appeared to come on unexpected to nearly all the members of the Exchange and is but little known there, although sales of 6,700 shares are reported for two days.

The production of the Ontario Silver Mining Company from March 1 to 22, inclusive, was 54 bars having an assay value of $115,981.61.

The *Salt Lake Tribune* of the 23d inst. says:

The Ontario Company has suspended mining of ore for a couple of weeks, there being no place for ore; 3,000 tons are now in the mill, the ore house full to the track, and 1,000 tons outside. The grade for the new shaft and hoisting works has been commenced.

COAL TRANSPORTATION AND GENERAL MINING STOCKS.

COAL STOCKS.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	Par Val.	ASSESSMENTS. Total levi'd to date.	Date and amount per share of last. Mo.	Yr.	Amt.	DIVIDENDS. Total paid to date.	Last Dividend. Mo.	Yr.	Amt.	Rate per Ann.	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. N. B.—Quotations of D., L. & W. R. R., and Pa. Coal Co. are per $100=two shares. Mar. 23. H.	L.	Mar. 25. H.	L.	Mar. 26. H.	L.	Mar. 27. H.	L.	Mar. 28. H.	L.	Mar. 29. H.	L.	SALES.
			$			$				$				Per c'nt															
Consol. Coal	Md.		10,250,000	102,500	$100	*					Jan.	1877	2½																
Del. & H. Canal	Pa.		20,000,000	200,000	100	*				38,821,104	Aug.	1876	4	9	52¼	51¼	51⅝	50⅝	51¾	51	52	51	53⅛	52	50¾	54	20,375
Del., Lac. & W. R. R.	Pa.		26,200,000	524,000	250	*					July	1876	2½	5	53½	52¼	52⅝	51⅛	52½	51⅜	52¼	52¼	54½	53⅝	56¾	54½	171,521
Lehigh C. & Nav.	Pa.		10,448,550	208,971	50	*					Nov.	1876	1½	5¼	17⅜	17¼	17½	17⅜	17¼	17⅛	17⅛	17⅛	17⅝	17⅜	17¾	17⅝	1,041
Lehigh Valley R. R.	Pa.		27,042,900	540,858	50	*									39	39	39	38⅞	39	38⅞	38¾	38¾	38⅞	38¾	39½	39¼	783
Maryland Coal	Md.		4,400,000	44,000	100	*					Jan.	1876	1½	1½													
N. J. Central R. R.	Pa.		20,000,000	200,000	100	*					Apr.	1876	2½	2½	14	14	14¼	14	13⅞	13⅛	14	14	16	15	17⅛	16¼	6,604
Pennsylvania Coal	Pa.		5,000,000	100,000	50	*					Feb.	1878	3														
Pennsylvania R. R.	Pa.		68,870,200	1,337,404	50	*					May.	1877	1¼	8	28⅜	27⅛	28⅛	27⅜	28⅛	27⅝	28⅜	28	29¼	28⅛	29¼	29	58,235
Phil. & Read. R. R.	Pa.		34,278,175	685,563	50	*				43,012,497	Jan.	1876	2¼†	10	13⅜	13⅛	13⅜	12¼	13⅜	13⅜	13⅜	13⅜	14¼	13⅜	14¼	14⅛	10,968

GENERAL MINING STOCKS.

Dividend Paying Mines.

American	Col.		1,000,000	100,000	10	*				40,000	Mar.	1878	$0	10	12														
Belcher, g. s.	Nev.	1,040	10,400,000	104,000	100	1,280,400	Mar.	1878	1 00	15,397,200	Apr.	1876	1	00	12														
Bobtail, g.	Col.	2,500	1,136,630	227,326	5	*				56,831	Nov.	1877		25															
Bobtail Tunnel, g.	Col.		100,000	20,000	5	52,000	July	1873	0 30	40,000	Dec.	1877		50	20														
California, g. s.	Nev.	600	54,000,000	540,000	100					24,840,000	Mar.	1878	2	00	24														
Calumet & Hecla, c.	Mch		2,000,000	80,000	25	1,000,000				12,650,000	Feb.	1878	5	00	20														
Central, c.	Mch		500,000	20,000	25	100,000	June	1862	0 65	1,200,000	Feb.	1878	5	00															
Cholliar Potosi, g. s.	Nev.	1,400	2,800,000	28,000	100	1,578,000	Jan.	1878	3 00	3,080,000	Feb.	1872	1	00															
Copper Falls, c.	Mch		1,000,000	20,000	50	535,000	May.	1876		100,000	Nov.	1871	1	00															
Cons. Virginia, g. s.	Nev.	710	54,000,000	540,000	100	474,600	June	1873	3 00	38,880,000	Mar.	1878	2	00	24	21⅜							20¾						210
Confidence, g. s.	Nev.	130	2,496,000	24,960	100	243,840	Mar.	1873	1 00	78,000	May.	1865	8½		8½														
Cons. Her. & Roe.	Col.	16,500	1,000,000	100,000	10	*				120,000																			
Crown Point, g. s.	Nev.	600	10,000,000	100,000	100	1,673,370	Jan.	1878	1 00	11,588,000	Jan.	1875	2	00	24														
Eureka Cons., g. s. L.	Nev.		5,000,000	50,000	100	100,000	May	1876	1 00	1,600,000	Feb.	1878	3	00	24														
Eureka G. Mg., g.	Cal.	1,680	2,000,000	20,000	100					2,134,000	Aug.	1877	2	00															
Franklin, c.	Mch		500,000	20,000	25	360,000	June	1876	5 00	585,000	Nov.	1871	1	00															
Gould & Curry, g. s.	Nev.	612	10,800,000	108,000	100	2,558,000	Dec.	1877	1 00	3,826,800	Oct.	1870	10	00															
Grand Prize	Nev.									1,200,000	Feb.	1878	1	00															
Hale & Norcross, g. s.	Nev.	400	11,200,000	112,000	100	2,746,000	Dec.	1877	1 00	1,598,000	Apr.	1871	5	00	12														
Hukill, g. s.	Col.	3,288	1,000,000	100,000	10	*				140,000	Mar.	1878	0	10	12	4½				4½						4.40	4.20	500
Kentuck, g. s.	Nev.	95	3,000,000	30,000	100	270,000	Dec.	1874	1 00	1,252,000	Mar.	1870	5	00															
Leopard, L. g. s.	Nev.	1,500	5,000,000	50,000	100	125,000	Feb.	1878	50	162,500	Dec.	1876	0	50		1		1		80c.								225
Merrimac, s.	Mas.	1,500	500,000	100,000	5	*				120,000	Mar.	1878	0	10	12														
Minesota, c.	Mch.		1,000,000	20,000	50	436,000	June	1869	1 00	1,820,000	Mar.	1876	0	50															
Moose	Col.	39,000	2,000,000	200,000	10	*				200,000	Mar.	1878	0	25	10	9½	8¾	9⅜	9¼	9¼	8½			8⅜	8¼	8¼		16,800
National, c.	Mch.		500,000	20,000	25	195,000	Oct.	1875	1 00	360,000	Oct.	1873	1	00															
N. Y. & Colorado, g.	Col.		1,000,000	50,000	20	*				20,000	Mar.	1877	0	20		2.15		2.10								2.15		400
Northern Belle, s.	Nev.	1,000	5,000,000	50,000	100					1,425,000	Feb.	1878	1	00															
Ontario.	Utah	3,000	10,000,000	100,000	100					1,100,000	Mar.	1878	0	50	6	34⅛		35		35						35⅛		410
Ophir, g. s.	Nev.	675	10,080,000	100,800	100	3,035,200	Jan.	1878	1 00	1,394,400	Mar.	1864	4	00															
Pewabic, c.	Mch.		500,000	20,000	25	185,000	June	1868	3 00	460,000	July	1873	1	00															
Phœnix, c.	Mch.		1,000,000	20,000	50	817,500	Sept.	1870	3 00	20,000	Jan.	1876	1	00															
Plumas	Cal.		1,000,000	100,000	10					6,000	Mar.	1878		06		3.65	3.60	3.65	3.55			3.65	3.60	3.65	3.60	3.70		5,700
Polar Star, g. s.	Col.	1,300	500,000	50,000	10	*				5,000	Jan.	1878	0	10															
Quincy, c.	Mch.		200,000	20,000	10					2,130,000	Feb.	1877	4	00															
Raymond & Ely, g. s.	Nev.	5,000	3,000,000	30,000	100	540,000	Dec.	1876	1 00	3,075,000	Sept.	1873	3	00															
Ridge, c.	Mch.		500,000	20,000	25	200,000				90,000	Feb.	1875	1	00															
Rye Patch	Nev.	3,000				97,500	Nov.	1876	0 50	150,000	Dec.	1877	0	25															
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10					250,000																			
Savage, g. s.	Nev.	800	11,200,000	112,000	100	3,650,500	Jan.	1878	1 00	4,460,000	June	1869	3	00															
Seaton, g. s.	Col.	1,700	500,000	50,000	10	*				10,000	May	1877	0	10	12														
Sierra Nevada, g. s.	Nev.	3,650	10,000,000	100,000	100	1,050,000	Jan.	1878	0 50	102,000	Jan.	1871	1	00	10														
Silver King										200,000	Feb.	1878	0	50															
Standard	Cal.									300,000	Feb.	1878	1	00															
Yellow Jacket, g. s.	Nev.	1,200	12,000,000	120,000	100	3,438,000	Mar.	1878	2 00	2,184,000	Aug.	1871	2	50															

Non-Dividend Mines.

Allouez, c.	Mch.		1,000,000	20,000	50	940,000	May	1876	5 00																				
Alpha, g. s.	Nev.	300	3,000,000	3,000	100	210,000	Aug.	1877	1 00																				
Am. Flag, g.	Col.	5,300	600,000	60,000	10	*										16c	15c	20c	17c	20c	19c	20c		21c	20c	19c	18c	8,900
Bertha & Edith. g.	Vir.	645 acs.	3,500,000	350,000	10	*										14c	12c	16c	14c	16c	15c	16c	15c	15c	14c	15c	14c	62,150
Best & Belcher, g. s.	Nev.	545	10,080,000	100,800	100	337,792	Aug.	1877	1 00																				
Bullion, g. s.	Nev.	9431/2	10,000,000	100,000	100	2,802,000	Jan.	1878	1 00																				
Caledonia, g. s.	Nev.	2,188	10,000,000	100,000	100	1,485,000	Feb	1878	0 50																				
Cashier	Col.		500,000	250,000	2	*																		1.10	1.05	1.10	1.05	6,700
Cleveland, g.	Col.	3,715	250,000	25,000	10	*																							
Cons. Imperial, g. s.	Nev.	468	50,000,000	500,000	100	575,000	Oct.	1877	0 20																				
Con. N. Slope & E. C.T.	Col.	15,000	500,000	10,000	50	*																							
Dana, c.	Mch.		500,000	20,000	25	68,000	Jan.	1863	0 50																				
Dawson, s.	Ont.		1,200,000	60,000	20																								
Duncan, s.	Ont.		1,200,000	60,000	20	75,000	July	1876	41⅔																				
Exchequer, g. s.	Nev.	400	10,000,000	100,000	100	380,000	Jan.	1878	1 00																				
Gold Placer, g.	Cal.		5,000,000	200,000	25											2.85	2.70			2.40	2¾	2	1⅛	2¼	1.90	2¼	2.15	6,800
Granville, g.	N. C.	9,000	1,000,000	100,000	10	*				0 50																			
Humboldt, c.	Mch.		500,000	20,000	25	100,000	Sept	1876	0 15																				
International, s.	Ont.		1,200,000	60,000	20																								
Julia, g. s.	Nev.	3,000	11,000,000	110,000	100	525,000	Jan.	1878	0 75																				
Justice, g. s.	Nev.	2,100	10,500,000	105,000	100	2,237,500	Jan.	1878	2 00																				
Kings Mountain, g.	N. C.		1,200,000	120,000	10	*																							
Lacrosse	Col.	3,900	1,000,000	100,000	10	*										50c	48c	53c	51¢	52c	46c	51c	46c	48c	43c	48c	40c	75,900
Lucerne	Col.	4,200	5,000,000	500,000	10	*																							
Madison, c.	Mch.		500,000	20,000	25	123,000	Sept	1876	0 10																				
Mariposa preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June	1877	1 00																				
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June	1877	1 00							1¾								2				300
Memphis	Col.	6,000	300,000	60,000	5	*																							
Mesnard, c.	Mch.		500,000	20,000	25	160,000	Apr.	1876	0 50																				
Mexican, g. s.	Nev.	600	10,080,000	100,800	100	181,440	Aug.	1877	0 30																				
Overman, g. s.	Mch.		1,000,000	40,000	25	3,053,880	Feb.	1878	3 00																				
Osceola, c.	Nev.	1,200	3,840,000	38,400	100	2,567,880	Nov.	1877	3 00																				
Petherick, c.	Mch.		500,000	20,000	25	165,533	Mar.	1876	0 50																				
Pleasant View, g.	Col.	1,200	200,000	20,000	10	*																							
Quicksilver preferred	Cal.	8,500	4,291,300			*																							
" common	Cal.	acres.	5,708,700	100,000	100											18												10	
Rockland, c.	Mch		500,000	20,000	25	495,000	Jan.	1874	1 00																				
Seg. Belcher, g. s.	Nev.	100	640,000	6,400	100	244,800	Apr.	1876	5 00																				
Silver City, g. s.	Nev.	3,900	6,310,000	63,100	100	15,775	Nov.	1875	0 25																				
Silver Hill, g. s.	Nev.	5,400	5,400,000	54,000	100	192,600	Dec.	1877	1 00																				
Star, c.	Mch.		500,000	20,000	25	265,000	Mar.	1876	0 50																				
Superior, c.	Mch.		500,000	20,000	25	340,000	Mar.	1874	0 25																				
Union Cons. g. s.	Nev.	850	10,000,000	100,000	100	285,000	Oct.	1877	0 25																				

g. Gold. s. Silver. L. Lead. c. Copper. * Non-Assessable.

Total Assessment levied to date..... 50,978,210 | Total Sales of Coal Stocks for the week..... 270,127 shares.
Total Mining Dividends to date..... 220,217,832 | Total Sales of Mining Shares for the week..... 186,805 "

† A dividend of 3½ per cent. was declared on the preferred stock of this Co. in July.

SAN FRANCISCO MINING STOCK QUOTATIONS.
Daily Range of Prices for the Week.

NAME OF COMPANY.	CLOSING QUOTATIONS. Mar. 23.	Mar. 25.	Mar. 26.	Mar. 27.	Mar. 28.*	Opening. Mar. 29.*
Alpha	8½	7¼	7¼	7¾	.....	.....
Belcher	3¼	2¾	3	3	.....	.....
Best & Belcher	18	17	17¼	17½	.....	.....
Bullion	5	4¾	4½	4¾	.....	.....
Caledonia	2	1¾	1¾	1¾	.....	.....
California	28¼	27½	27¾	28¼	.....	.....
Chollar-Potosi	27¾	27½	26	27	.....	.....
Con. Imperial	.....	.....	.....	.....	.....	.....
Con. Virginia	20	21¾	19½	20	.....	.....
Confidence	4¼	4½	3¾	3¾	.....	.....
Crown Point	5	4½	4¾	5	.....	.....
Eureka Con	40½	40¾	42	43¼	.....	.....
Exchequer	3	3	3	2¾	.....	.....
Gould & Curry	7¼	7	7	7	.....	.....
Grand Prize	6½	5¾	6¼	6	.....	.....
Hale & Norcrosse	.....	.....	.....	8¼	.....	.....
Julia	2¼	1¾	1¾	2½	.....	.....
Justice	7½	7¼	7	7	.....	.....
Kentuck	3¼	3¼	3	3	.....	.....
Mexican	12¾	11¼	11¼	12	.....	.....
Northern Belle	8	8	8	8	.....	.....
Ophir	36¾	31	34	36¾	.....	.....
Overman	14½	13	13	13½	.....	.....
Raymond & Ely	4	4½	4	4¼	.....	.....
Silver Hill	1¾	1½	1½	1¾	.....	.....
Savage	9	8½	9½	9¾	.....	.....
Seg. Belcher	26	26	26	26	.....	.....
Sierra Nevada	3¼	3¾	3	3	.....	.....
Union Con	5½	5	5	5	.....	.....
Yellow Jacket	8¼	8¼	7½	7½	.....	.....

*We are without quotations for these dates owing to interruptions in telegraphic communication.

From the mining summary in the *Gold Hill News*, of the 20th inst., we condense the following: "The fluctuations in stocks during the week ending to-day have been fearfully swift and violent. At the opening, there was every prospect of speedy and rich developments in Ophir, which gave a strong upward impetus to the entire market. The ore developments, however, did not equal expectations, and the result is that the stock of that mine has broken sharply down from $64 to $25 per share, carrying everything else along the entire line with it. The developments on the 1,900 level, however, while not being what many anticipated, are far from being an utter discouragement. The drifts and crosscuts have shown that the ore channel has great length, that much of the ore is very rich, and, although narrow, there is undoubted evidences of its rapidly widening in a downward direction.

"We have also to chronicle the stoppage of several of the Consolidated Virginia mills for want of a sufficient supply of ore, caused by a breakage of the pump in the C. & C. shaft, and a consequent inability to hoist ore from the mine through that shaft. This has thrown the bullion production of that mine nearly six days behind the usual amount at this date in the month. However, Superintendent Fair feels confident that he will yet be able to make up all losses, and furnish the usual dividends on time. The California supplies of ore were not affected by the stoppage, as a large portion of the ore from that mine is hoisted through the Ophir shaft.

"Wrecks are strewed all along the beach of the stock market to-day, and the stock still continues, sweeping many marginal boats toward the lee shore of the sea of ruin and despair. The horizon is still dark and threatening."

The Modoc Consolidated Mining Company, situated in Inyo County, Cal., produced during the year 1877 bullion to the amount of $631,312.60.

The New Coso Mining Company, also situated in Inyo County, Cal., produced bullion, during the past year, amounting to $488,400.

The Cleveland Gold Mining Co. will hold its annual meeting April 13.

Assessments, with dates when delinquent: Advance, 50c., April 15; Golden Chariot, 25c., April 12; Panther, 10c., April 22; Newark, 50c., April 22; Moore's Flat Blue Gravel, 25c., April 18.

Pacific Coast Assessments, aggregating $507,200 will become delinquent during the current month. Those upon Storey County (Nev.) mines alone foot up $297,200.

NEW INCORPORATIONS.

We note the recent organization of the following companies in addition to those announced in our issue of March 2:

Name of Company.	Location.	Cap. stock.
Augusta Mining Co	Arizona	$10,000,000
Ellen Gorven Mining Co	"	10,000,000
Monterey Water Co	"	15,000
Oak Grove Mining Co	"	5,000,000
Silver Bell "	"	10,000,000
Sumacacori "	"	10,000,000
Cañon City Hydraulic Ditch Co	Colorado.	12,000
Empire Ditch & Placer Mining Co	"	200,000
Musk Ox G. & S. Mining Co	"	500,000
Platte Valley Placer Gold Mining	"	3,000,000
Revenue Mining & Milling Co	"	500,000
Altura Mining Co	California.	10,000,000
Inyo Plumbago Mining Co	"	1,000,000
Tioga Cons. Mining Co	"	10,000,000
Florence Gold & Silver Mining Co	Nevada.	5,000,000
Altar Gold and Silver "	Mexico.	10,000,000

A company with a capital stock fixed at ten millions has been incorporated in San Francisco to work mines in the Black Hills.

Gas Stocks.

NEW YORK, Friday Evening, March 29, 1878.

The gas stock market is without particular change either in prices or business. The stock of the New York Mutual shows a slight advance, while that of the New York Co. is lower. The Municipal, of New York, is a little stronger, and the stock of the Harlem company shows a decline of $3 per share in the bid quotation. The Brooklyn Gas Company has declared a dividend of 5 per cent. payable on the 1st proximo.

Washington D. C., Gas Co.—From the Cincinnati *Inquirer*, of the 21st inst., we learn that Congress has recently passed an act fixing the price to be charged by this company for gas at $2 to the Government, and $2.25 to private consumers, with a discount of twenty-five cents per one thousand cubic feet if paid within seven days after the rendering of the bill. That makes the net price to the Government $1.75, and to private consumers $2. The same act provides that when the price of gas coals, delivered at the works of said company, shall advance above $6 per ton (2,240 lb.), the company may advance on the above prices to consumers at the rate of ten cents per one thousand cubic feet for each additional dollar per ton that gas coals may have advanced over $6.

According to the report of Senator Morrill, of Vermont, Chairman of the Committee on Public Buildings and Grounds, submitted to the Senate in 1874, the Washington Gas-Light Company was incorporated July 8, 1848—

With a capital of	$50,000
August 2, 1852, increased to	350,000
January 3, 1855, increased by adding	150,000
May 24, 1866, increased by adding	500,000
May 29, 1872, increased by adding	200,000
Making the total capital, April, 1874	$1,200,000

The cost of gas coals delivered at the works of the Washington Gas-Light Company is $5.85 per ton; and the quantity of gas manufactured in 1877 was 305,000,000 cubic ft., of which were sold to consumers, 286,000,000 cubic ft. Loss by leakage and condensation, 19,000,000 cubic ft. According to the testimony of Mr. Bartol, President, the company has regularly paid (one year excepted) semi-annual dividends of five per cent., and occasional extra dividends, in money; and that no part of the addition to their stock of half a million of dollars, in 1866, was paid in money, but was all distributed in new stock to their stockholders as accumulated earnings. In other words, the stock was doubled, and the stockholders have been receiving since that date ten per cent. on twice the amount of stock originally paid for, or twenty per cent. dividends on their actual investment. The conclusion of the committee was that "the profits of the company, as compared with other ordinary business enterprises, must be regarded as excessive."

Consolidation of Virginia (Nev.) Gas Companies.—The Virginia Gas Company has purchased all the property of the Peoples' Gas Company, and those who have been taking gas of the latter will hereafter be supplied by the former company.

Georgetown (Ky.) Gas Works.—These works, with only 85 consumers, pay their owners an annual profit of $1,000.

Louisville (Ky.) Gas Co.—We note recent quotations of the stock of this company at 90 bid and 91 asked.

Recent Quotations of Massachusetts Gas Stocks are noted as follows: Boston Gas Co., 80713/16; Brookline, 112¾ to 113¼; Cambridge, 138 to 138¼; Citizens', of Wakefield, 33½ to 34¾.

Baltimore Gas-Light Co.—10 shares of this company's stock sold during the week at 86@85 per cent. Also $2,000 of the gold certificates at 101¾ per cent.

Washington, (D. C.) Gas-Light Co.—20 shares of this stock, par $20, full paid, sold at auction in Philadelphia last week at $46 per share.

The following list of Companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York:

COMPANIES IN NEW YORK AND VICINITY.	Capital Stock.	Par.	DIVIDENDS. Rate per ann.	Am. of last.	Date of last.	QUOTATIONS Bid.	As'd
	$		P. ct.				
Mutual, N. Y.	5,000,000	$100	10	1½	Apr., '78	62	72
" Bonds	90,000	1,000	7	3½	Feb., '78	....	102
N. York "	4,000,000	.....	10	5	Nov., '77	115	118
Metrop. "	2,500,000	100	10	5	Feb., '78	128	132
" Certfs.	1,000,000	.....	7	3½	" '78	100	103
" Bonds.	500,000	1,000	7	3½	Dec., '77	102	...
Harlem "	1,850,000	50	8	3	Feb., '78	87	95
Manhat. "	4,000,000	50	....‡	5	" '78	200	204
Brooklyn, Bkln.	2,000,000	52	15	5	Apr., '78	160	165
Nassau "	1,000,000	25	....‡	3	Jan., '78	70	80
" Certfs.	700,000	1,000	7	3½	Nov., '77	....	101
People's	1,000,000	10	....‡	3½	Jan., '77	25	40
" Certfs.	300,000	1,000	7	3½	Jan., '78	80	85
" Bonds	325,000	.....	7	3	Feb., '78	96	100
Metrop. "	1,000,000	10	5	2½	Nov., '77	69	72¾
W'msb'g "	1,000,000	50	10	2	Jan., '78	102	110
" Certfs.	1,000,000	.....	7	3½	July '77	100	102
Citizens'	1,200,000	20	....‡	3	Jan '78	81	86
" Certfs.	320,000	1,000	7	3½	Oct., '77	97	100
J. C., N. J.	750,000	20	10	5	July, '77	160	....
Cen. Wstch. N.Y.	466,000	50	7	4	July, '77	70	....
Subur'n, "	295,000	50	7	3½	Oct., '77	....	95
Municipal, N. Y.	1,500,000	100	.....	.....	.....	95	100

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